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COMMERCIAL FISHERIES REVIEW

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STATUS OF NEW ENGLAND SEA-SCALLOP FISHERY^{1/}

By Ernest D. Premetz* and George W. Snow**

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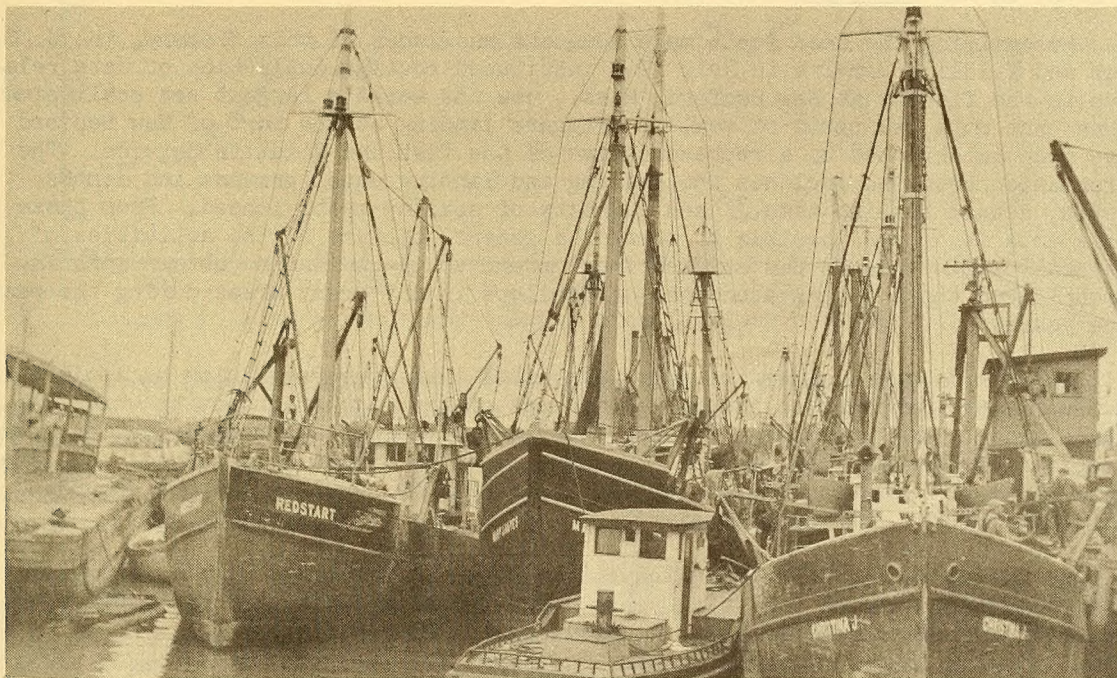


FIGURE 1 - TWO SCALLOPERS--REDSTART AND CHRISTINA J.--TIED UP AT A NEW BEDFORD DOCK GETTING READY FOR ANOTHER TRIP.

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^{1/}PREPARED AT THE REQUEST OF THE ATLANTIC STATES MARINE FISHERIES COMMISSION.

NOTE: ONLY THE SEA SCALLOP'S LARGE MUSCLE THAT CONTROLS THE SHELL MOVEMENTS IS MARKETING. SCALLOPS ARE SHUCKED AND THE LARGE MUSCLES (CALLED EYES) CUT OUT ABOARD THE VESSEL, BUT THE REMAINDER IS GENERALLY DISCARDED. THEREFORE, THE SCALLOP MEATS LANDED REPRESENT ONLY A SMALL PROPORTION OF THE GROSS OR NET WEIGHT OF THE SCALLOPS.

INTRODUCTION

The giant or sea scallop, Pecten grandis (Solander),^{2/} is today one of New England's major fishery resources. The past two decades have witnessed about a tenfold rise in production--almost 20 million pounds of scallop meats, valued in excess of 9 million dollars, were landed in the peak year of 1950.



FIGURE 2 - A CLOSE-UP VIEW OF A TYPICAL NEW BEDFORD SCALLOP DRAGGER (MOONLIGHT) IN PORT.

The industry has in past years expressed concern for the future of the fishery. Although the over-all production trend has been upward, there has been a general belief among scallop fishermen that production was maintained at the expense of depletion of certain grounds and that the present rate of fishing would result in ultimate depletion of all areas. Fishermen have reported that in many areas they are forced to work longer to get a trip.

Recognizing the need for a more adequate knowledge of this fishery, the U. S. Fish and Wildlife Service in July 1943 instituted routine collection of data relative to the fishery at New Bedford, Mass., now the world's largest sea scallopport. Since that date, skippers of scallop draggers landing at the port of New Bedford have been interviewed by a representative of the Fish and Wildlife Service. The information obtained includes the sailing and landing date, grounds and depths fished, actual fishing time,^{3/} and quantity of scallop meats landed. From these basic data it is now possible to present a general picture of the activities of the scallop fleet as it has shifted from ground to ground and to obtain some information on the changing abundance of scallops in different areas during the past nine years.

Members of the scallop industry have asked that some regulation be applied to the fishery in order to insure maintenance of the high productivity which has characterized the operations over the past years. Before any recommendations for conservation measures can be made, two basic questions must be answered: (1) Are there signs of depletion on the scallop grounds? (2) How long can the grounds withstand present fishing intensity?

An answer to the first question can be given on the basis of the interview data collected over the past nine years. The second question cannot be fully answered until more is learned about the biology of the sea scallop.

UNITED STATES LANDINGS

In table 1 are tabulated the United States landings of sea scallops (meats only) by state and region for all years since 1889 for which records are available.

^{2/}THE CORRECT SCIENTIFIC NAME OF THE SEA SCALLOP HAS BEEN THE SUBJECT OF CONSIDERABLE DEBATE. MODERN TAXONOMISTS SEEM TO AGREE ON PECTEN GRANDIS (SOLANDER). OTHER NAMES FOUND IN LITERATURE ARE P. MAGELLANICUS (GMELIN) AND P. TENUICOSTATUS (MIGHELS).

^{3/}"DAYS FISHED" AS USED IN THIS REPORT INCLUDES TIME SPENT IN ACTUAL FISHING AND MOVEMENT FROM GROUND TO GROUND, BUT DOES NOT INCLUDE TIME SPENT "JOGGING" DURING ADVERSE WEATHER.

There are only sporadic records from 1889 to 1929. From 1929 to the present the records are fairly complete. The variations in U. S. landings from 1929 through 1952 are shown graphically in figure 3.

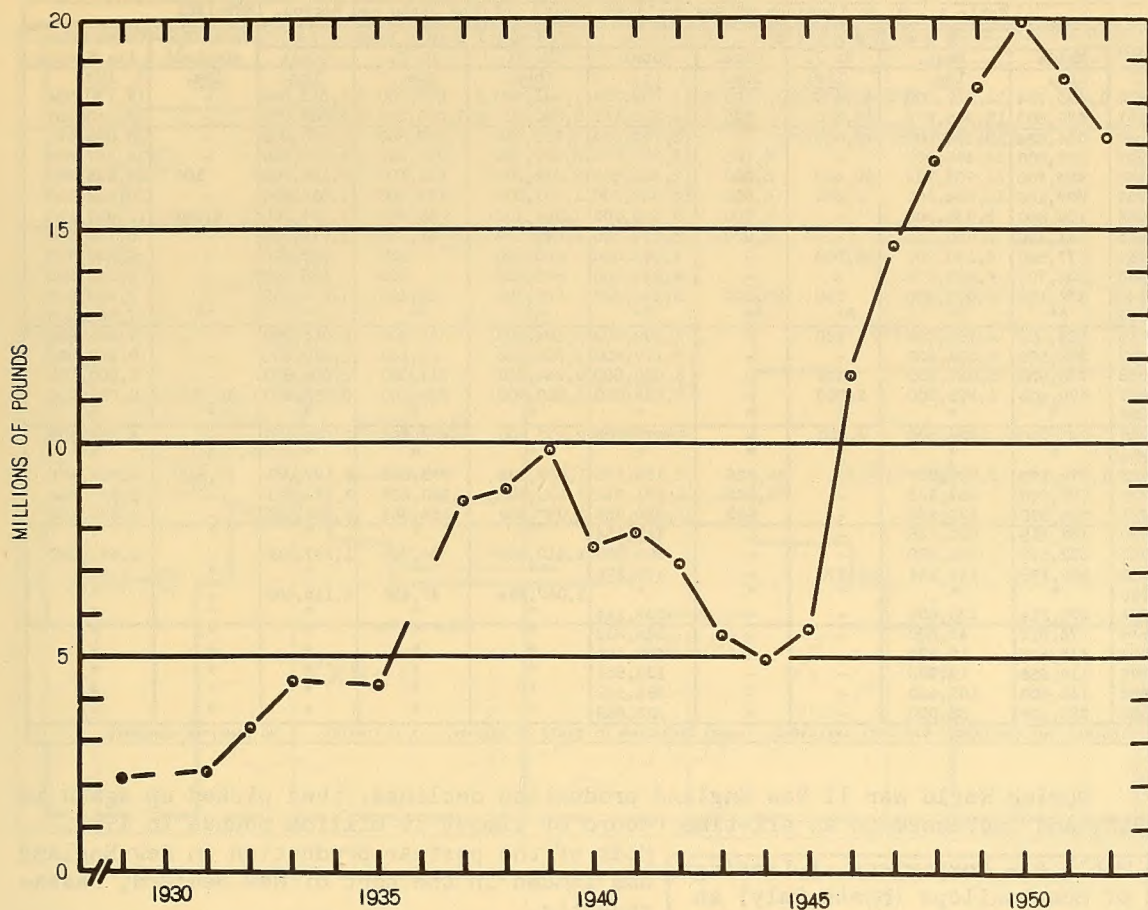


FIGURE 3 - TOTAL UNITED STATES LANDINGS OF SEA SCALLOPS (MEATS ONLY), 1929-52.

We note that landings rose from slightly over 2 million pounds of scallop meats in 1929 (the first year for which we have complete statistics) to almost 20 million pounds in 1950, reaching an initial peak of about 10 million pounds in 1939, dropping during World War II to slightly less than 5 million pounds in 1944, and then rising rapidly to the peak in 1950. Landings decreased in 1951, and in 1952 dropped to about 17 million pounds--the lowest since 1948.

COMPARISON BY REGIONS: In the early years of the fishery by far the greatest portion of the United States sea-scallop catch was landed in the New England States, but with the discovery of scallop beds off Long Island in the early 1920's, the Middle Atlantic ports assumed leadership. Many of the boats fishing the New England area (principally off the Maine coast) moved their base of operations. It was not until the middle 1930's that the New England landings again exceeded the Middle Atlantic catch. This was not due to a shift from Middle Atlantic ports because the landings in these ports also increased up to 1938.

The increased landings in New England were due to the discovery of scallop beds on Georges Bank and the development of markets for the product. Most of this catch was landed in Massachusetts ports. As indicated in table 1, Massachusetts

landings which had generally been well under one million pounds of scallop meats jumped to almost 5 million pounds in 1937.

Table 1 - U. S. Landings of Sea Scallops (Meats Only) by State and Region, 1889-1952										
Year	New England				Total	Middle Atlantic			Total Chesapeake	Total Atlantic States
	Maine	Mass.	R. I.	Conn.		N. Y.	N. J.	Total		
	Lbs.	Lbs.	Lbs.	Lbs.	Lbs.	Lbs.	Lbs.	Lbs.	Lbs.	Lbs.
1952	1,495,754	13,319,000 X	42,400 X	100 X	14,857,254	1,441,000 X	872,000 X	2,313,000	-	17,170,254
1951	676,803	13,565,878	67,300	200 X	14,310,181	3,300,000 X	1,000,000 X	4,300,000	-	18,610,181
1950	524,824	13,186,200	42,000	-	13,753,024	4,806,200	1,328,800	6,135,000	-	19,888,024
1949	509,000	13,468,900	-	2,100	13,980,000	3,309,200	998,600	4,307,800	-	18,287,800
1948	453,700	11,985,700	40,400	3,000	12,482,800	3,318,200	835,100	4,153,300	100	16,636,200
1947	507,100	12,524,600	1,600	6,000	13,039,300	1,441,000	173,800	1,614,800	-	14,654,100
1946	136,800	9,438,300	-	3,000	9,578,100	1,966,100	68,800	2,034,900	4,100	11,617,100
1945	71,400	3,920,200	-	2,600	3,994,200	1,648,100	68,500	1,716,600	-	5,710,800
1944	77,800	4,158,700	26,500	-	4,263,000	605,600	100	605,700	-	4,868,700
1943	232,700	4,609,500	-	-	4,842,200	686,400	300	686,700	-	5,528,900
1942	132,100	6,007,200	100	25,000	6,164,400	962,200	56,400	1,018,600	-	7,183,000
1941	**	**	**	**	**	**	**	**	**	7,864,500
1940	199,100	5,191,700	100	-	5,390,900	2,184,400	67,500	2,251,900	-	7,642,800
1939	593,500	6,584,400	-	-	7,177,900	2,590,500	20,100	2,610,600	-	9,788,500
1938	792,900	5,057,200	400	-	5,850,500	2,944,800	114,000	3,058,800	-	8,909,300
1937	679,400	4,976,900	2,700	-	5,659,000	2,818,700	234,100	3,052,800	10,800	8,722,600
1936	*	*	*	*	*	*	*	*	*	*
1935	743,200	924,300	2,600	-	1,670,100	2,213,500	426,600	2,640,100	-	4,310,200
1934	*	*	*	-	*	*	*	*	-	*
1933	1,073,172	1,029,097	-	55,926	2,158,195	1,823,492	373,589	2,197,081	72,645	4,427,921
1932	607,780	869,634	-	94,527	1,571,941	1,531,587	240,234	1,771,821	-	3,343,762
1931	586,870	493,663	-	423	1,080,956	1,097,868	154,364	1,252,232	-	2,333,188
1930	436,416	510,738	-	-	947,154	*	*	*	*	*
1929	358,570	446,280	-	-	804,850	1,610,310	56,700	1,667,010	-	2,471,860
1928	326,178	119,124	29,970	-	475,272	*	*	*	*	*
1926	*	*	*	*	*	1,067,964	47,436	1,115,400	-	*
1924	200,514	138,600	-	-	339,114	*	*	*	*	*
1919	72,512	42,300	-	-	114,812	*	*	*	*	*
1905	415,600	15,005	-	-	430,605	*	*	*	*	*
1902	114,656	19,200	-	-	133,856	*	*	*	*	*
1898	166,509	198,440	-	-	364,949	*	*	*	*	*
1889	295,299	28,550	-	-	323,849	*	*	*	*	*

1/VIRGINIA AND MARYLAND. *NO DATA AVAILABLE. **NO BREAKDOWN BY STATE OR REGION. X ESTIMATED. - NO LANDINGS REPORTED.

During World War II New England production declined, then picked up again in 1946, and increased to an all-time record of almost 15 million pounds in 1952.

Table 2 - Comparison of Landings of Sea Scallops (Meats Only) at New Bedford, Mass., with Atlantic Coast States, 1938-52

Year	New Bedford	Atlantic Coast	Percentage landed at New Bedford
	(Thousands of Lbs.)		%
1952	12,110	17,170 X	70.5
1951	12,602	18,610 X	67.7
1950	11,982	19,888	60.2
1949	11,707	18,288	64.0
1948	10,082	16,636	60.6
1947	10,675	14,654	72.8
1946	8,940	11,617	77.0
1945	3,897	5,711	68.3
1944	4,009	4,869	82.3
1943	3,832	5,529	69.3
1942	5,446	7,183	75.8
1941	5,579	7,865	70.9
1940	4,414	7,643	57.8
1939	4,733	9,789	48.4
1938	4,255	8,909	47.8

X PARTIALLY ESTIMATED.

Most of the postwar production in New England was landed in the port of New Bedford, Massachusetts.

Middle Atlantic landings after the War rose to a peak of over 6 million pounds in 1950 and then declined to a little over 2 million pounds in 1952.

NEW BEDFORD LANDINGS AND FISHING AREAS

The principal scallop port for many years, especially since 1941, has been New Bedford. Landings at this port are compared with those for the entire Atlantic Coast for the years 1938 through 1952 in table 2. Most of the studies included in this report are based on an analysis of landings in New Bedford from 1944 through 1952, during which period New Bedford received from 60 to 82 percent of the total Atlantic Coast scallop production.

Scallops landed at New Bedford are taken largely from eight of the statistical subareas

established by the North American Council for Fishery Investigations as revised in 1943 (Rounsefell 1948)--fig. 4. Landings from each of these areas for the years 1944 through 1952 are given in table 3.

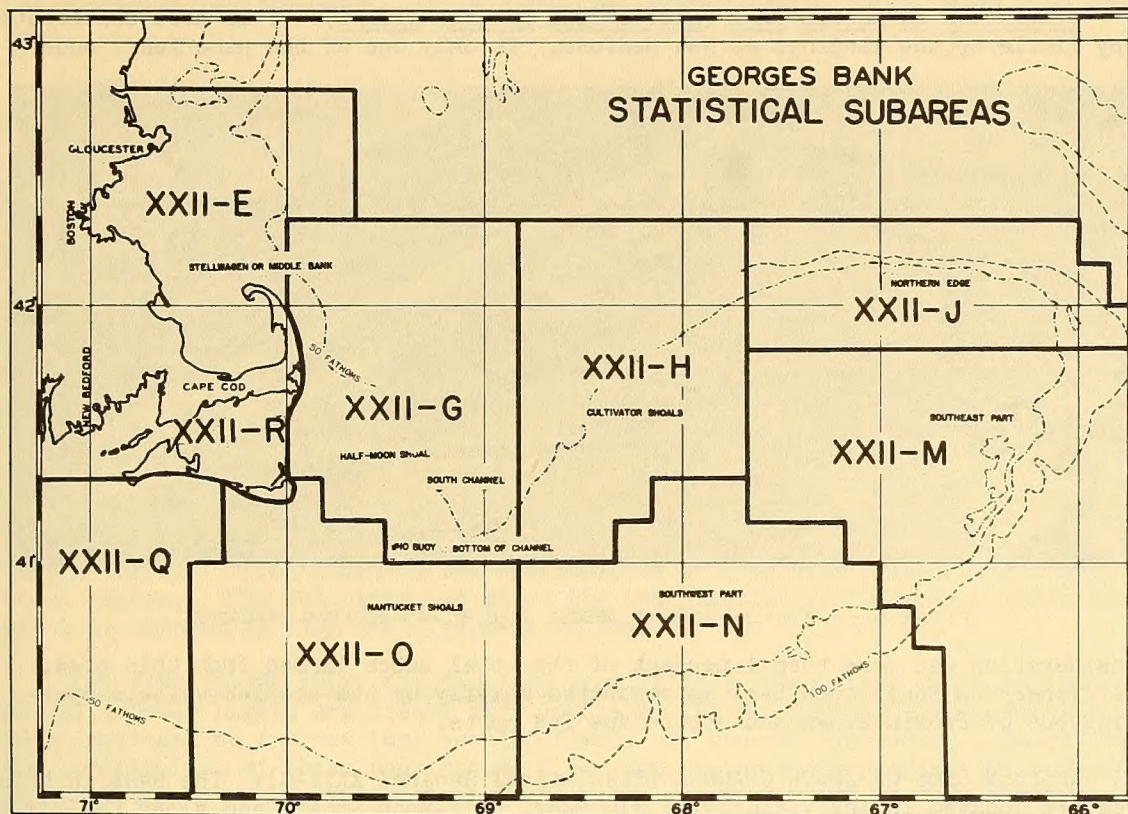


FIGURE 4 - REVISED STATISTICAL SUBAREAS ADOPTED IN 1943 FOR BIOSTATISTICAL DATA.

The fluctuations in the percentage contributions of the various areas to the New Bedford landings are not, of course, reliable indicators of depletion or abundance. The amount of fishing in any given area will be determined to some extent

Table 3 - New Bedford (Mass.) Landings of Sea Scallops (Meats) by Area of Catch, 1944-52

Year	Unit	Stellwagen or Middle Bank (XXII-E)	W. Side So. Channel (XXII-G)	Cultivator Shoals (XXII-H)	Northern Edge (XXII-J)	Southeast Georges (XXII-M)	Southeast Georges (XXII-N)	Nantucket Shoals (XXII-O)	Off Fire Island Inlet (XXIII)	Total All Areas
1952	Lbs.	12,109	2,773,095	36,329	5,049,698	3,172,712	823,452	242,192	-	12,109,587
	%	0.1	22.9	0.3	41.7	26.2	6.8	2.0	0.0	100.0
1951	Lbs.	126,023	1,764,319	819,148	3,516,035	1,109,000	3,730,273	1,499,671	37,807	12,602,276
	%	1.0	14.0	6.5	27.9	8.8	29.6	11.9	0.3	100.0
1950	Lbs.	203,697	2,048,955	59,910	2,180,758	2,024,989	2,743,920	2,552,205	167,751	11,982,185
	%	1.7	17.1	0.5	18.2	16.9	22.9	21.3	1.4	100.0
1949	Lbs.	81,950	2,411,676	468,286	4,237,994	152,193	468,287	3,816,536	70,243	11,707,165
	%	0.7	20.6	4.0	36.2	1.3	4.0	32.6	0.6	100.0
1948	Lbs.	30,246	1,492,107	141,145	3,770,595	2,278,488	90,736	2,086,934	191,554	10,081,805
	%	0.3	14.8	1.4	37.4	22.6	0.9	20.7	1.9	100.0
1947	Lbs.	85,400	1,366,414	1,195,612	7,525,950	96,076	-	394,979	10,675	10,675,106
	%	0.8	12.8	11.2	70.5	0.9	0.0	3.7	0.1	100.0
1946	Lbs.	44,700	563,221	992,342	4,085,588	143,040	2,369,104	742,021	-	8,940,016
	%	0.5	6.3	11.1	45.7	1.6	26.5	8.3	0.0	100.0
1945	Lbs.	-	331,230	701,430	1,987,385	136,390	116,905	545,557	77,936	3,896,833
	%	0.0	8.5	18.0	51.0	3.5	3.0	14.0	2.0	100.0
1944	Lbs.	40,088	240,529	400,881	2,325,111	400,881	120,265	481,057	-	4,008,812
	%	1.0	6.0	10.0	58.0	10.0	3.0	12.0	0.0	100.0

by the relative productivity of adjacent areas. It is, therefore, possible that a productive area may be neglected for some period of time if neighboring areas are found to be more profitably fished.

STELLWAGEN OR MIDDLE BANK (Statistical Subarea XXII-E): This area contributes very little to the landings at New Bedford. In only one of the nine years under

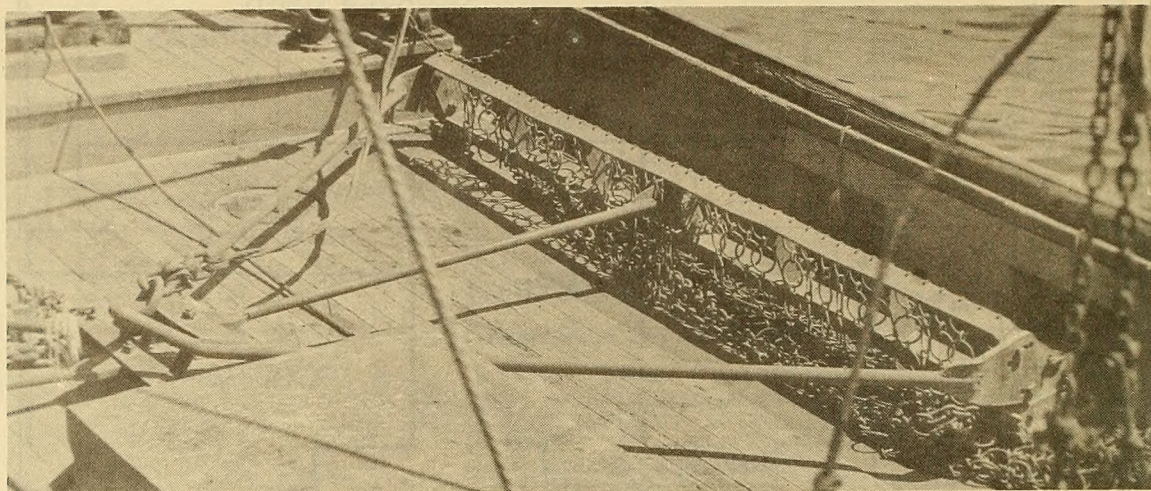


FIGURE 5 - A TYPICAL SCALLOP DREDGE USED BY NEW BEDFORD DRAGGERS.

consideration was more than 1 percent of the total catch landed from this area. The fishery on Stellwagen Bank is conducted chiefly by the smaller vessels operating out of Provincetown and other Cape Cod ports.

WESTERN SIDE OF SOUTH CHANNEL (Statistical Subarea XXII-G): The beds in this area are located in the vicinity of #10 Buoy, Half-Moon Shoal, and along the Bottom of South Channel. In 1944, 6 percent of the total catch came from this area. In subsequent years, the contribution of this area increased, until more than 20 percent of the total came from here in 1949. The production from this area decreased slightly in 1950 and 1951, and then increased again in 1952, with almost 23 percent of the catch originating here in that year.

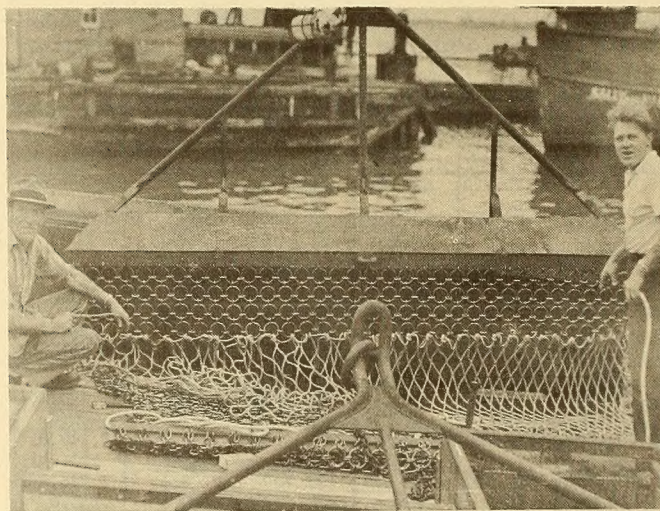


FIGURE 6 - THE DRAGGER ARNOLD BEING FITTED WITH A NEW SCALLOP DREDGE AT A NEW BEDFORD SHIPYARD.

CULTIVATOR SHOALS (Statistical Subarea XXII-H): This ground contributed 10 percent of the catch in 1944, 18 percent in 1945, and about 11 percent in each of the next two years. Subsequent years saw only minor landings from this area. An increase was noted in 1951, when more than 6 percent of the total catch came from this area, but in 1952 the catch from this ground dropped again.

NORTHERN EDGE (Statistical Subarea XXII-J): In the earlier years, 1944-47, this was the most important scallop area, accounting for 45 to 70 percent of the catch. In each of the next two years, 1948 and 1949, this area contributed between 36 and 37 percent of the catch, and in 1950 about 18 percent. During the next two years production increased. In 1952 over 40 percent of the total catch came from here.

SOUTHEAST GEORGES (Statistical Subarea XXII-M): These beds accounted for 10 percent of the total catch in 1944, but in subsequent years a considerable decline in landings was noted, until 1947 when less than 1 percent of the total catch came from here. In 1948 there was a tremendous increase, with almost 23 percent of the total catch coming from these beds. In following years the landings from this area varied greatly, declining to about 1 percent in 1949 and jumping to over 26 percent of the New Bedford landings in 1952.

SOUTHWEST GEORGES (Statistical Subarea XXII-N): Only 3 percent of the catch was landed from this area in 1944 and 1945, but in 1946 more than 26 percent of the total originated here. The next two years landings from this area were practically nil. In 1949, 4 percent came from this area, and in 1950 and 1951, 23 and 30 percent, respectively. In 1952 less than 7 percent of the New Bedford catch originated here.

NANTUCKET SHOALS (Statistical Subarea XXII-O): During 1944-46, the contribution of this area fluctuated between 8 and 14 percent. In 1947 it dropped to less than 4 percent. From 1948-50, the contribution of this area ranged from about 21 to 33 percent. The following two years the contribution of these beds declined to about 12 percent in 1951 and 2 percent in 1952.

OFF FIRE ISLAND INLET (Statistical Area XXIII): These beds off Long Island, SE. of Ambrose Light, are fished very little by the New Bedford fleet, but have been important to the New York scallop fleet. In none of the years, 1944-52, does the contribution of these beds exceed 2 percent of the total scallop catch landed at New Bedford.

ABUNDANCE

Landings alone do not tell us much about the relative abundance of scallops on the grounds. Landings have been artificially controlled by agreements among the fishermen. The union has prescribed a catch limit of 100 gallons (900 pounds) of scallop meats per man per trip during most of the period of this study. In the early part of the period the limit was 150 gallons (1,350 pounds). The union rules

Table 4 - Abundance Index (Catch Per-Unit-Of-Effort) for the New Bedford Sea-Scallop Fleet, 1944-52^{1/}

Year	Quantity Hauled (Meats)	Trips	Days Fished	Avg. No. of Days Fished Per Trip	Catch Per Boat Per Day (Meats)
	Lbs.	No.	No.	No.	Lbs.
1952	12,149,200	1,393	7,792.6	5.6	1,559
1951	12,496,346	1,478	7,537.0	5.1	1,658
1950	11,587,329	1,393	7,040.0	5.1	1,646
1949	11,214,468	1,494	8,072.8	5.4	1,389
1948	9,510,732	1,404	7,205.1	5.1	1,320
1947	10,519,335	1,435	6,301.0	4.4	1,669
1946	7,586,775	766	4,238.0	5.5	1,790
1945	2,813,544	296	1,717.2	5.8	1,638
1944	3,093,462	325	1,711.6	5.3	1,807

^{1/} INTERVIEWED VESSELS ONLY.

further required that boats engage in actual fishing operations for not more than 8 days and that they remain in port 2 to 4 days between trips. However, these regulations have not been in force since the latter part of 1952.

Throughout the period of this study the scallop boats were able to catch the established limit in less than eight days, except during periods of unfavorable weather. We are thus afforded two measures of abundance: the catch per-unit-of-effort and the number of fishing days required to catch the prescribed limit.

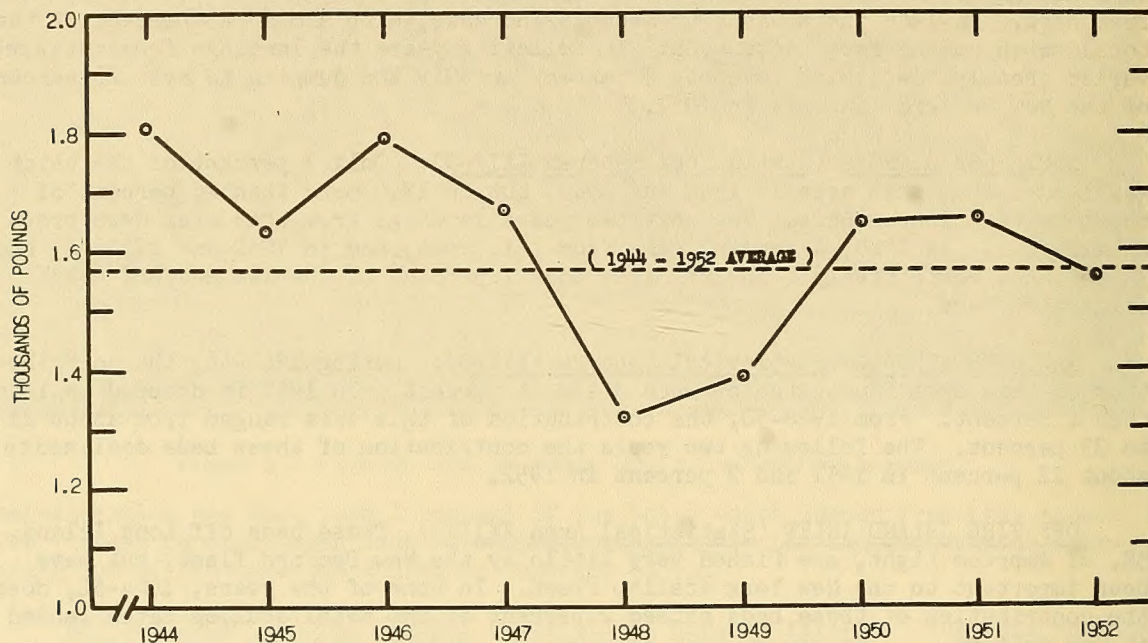


FIGURE 7 - CATCH PER BOAT PER DAY (IN THOUSANDS OF POUNDS) FOR THE NEW BEDFORD SEA-SCALLOP FLEET, 1944-52.

The first index, catch per boat per day, is shown in the last column of table 4 and is plotted in fig. 7. It will be noted that this index varies very little throughout the period of study except for the years 1948 and 1949 when the index was somewhat lower.

The other index, average number of days fished per trip, was also remarkably uniform (column 5, table 4).

One must conclude from these data that there has not been a serious depletion of scallops in the Atlantic banks considering the area as a whole. It must be borne in mind that these figures are for landings at New Bedford regardless of area fished.

Since the fleet shifts its effort from place to place in order to continue operations in the best fishing areas it is desirable to examine abundance indexes according to particular regions.

In table 5 are tabulated the catches per day for statistical subareas from 1944 through 1952. The outstanding feature of this table is the uniformity of catch per day throughout the various areas and years. Most catches are between 1,200 and 1,800 pounds per day. In only two areas did the catch per day drop below 1,000

pounds during the nine-year period--Stellwagen Bank for three years and off Fire Island Inlet in 1947, but these areas were never important to the New Bedford fleet. Neither area contributed as much as 2 percent of the catch during the study period.

One possibly significant fact emerges from the data in this table. The two years, 1948 and 1949, which were low years in the index calculated for all banks,

Table 5 - Catch Per Day of Sea Scallops (Meats) by Area, 1944-52									
Fishing Area	1952	1951	1950	1949	1948	1947	1946	1945	1944
	(Pounds)								
Stellwagen or Middle Bank (XXII-E)	820	1,231	1,286	1,021	906	945	1,102	1/	1,022
W. Side South Channel (XXII-G)	1,484	1,518	1,456	1,350	1,229	1,436	1,365	1,570	1,768
Cultivator Shoals (XXII-H) ..	1,505	1,680	1,463	1,525	1,336	1,642	1,677	1,324	1,509
Northern Edge (XXII-J)	1,577	1,714	1,606	1,364	1,307	1,734	1,370	1,698	1,886
Southeast Georges (XXII-M) ..	1,633	1,802	1,658	1,411	1,392	1,626	1,782	1,727	1,842
Southwest Georges (XXII-N) ..	1,502	1,623	1,766	1,323	1,260	1/	1,990	1,633	2,054
Nantucket Shoals (XXII-O) ...	1,474	1,764	1,806	1,456	1,389	1,794	1,505	1,456	1,596
Off Fire Island Inlet (XXIII)	1/	1,081	1,319	1,026	1,035	450	1/	1,080	1/

1/INSUFFICIENT FISHING TO COMPUTE A RELIABLE INDEX.

are years in which the index is generally low for each area. It might possibly mean that factors which control the abundance of scallops in one particular area have similar effects throughout the entire area of Georges Bank and Nantucket Shoals.

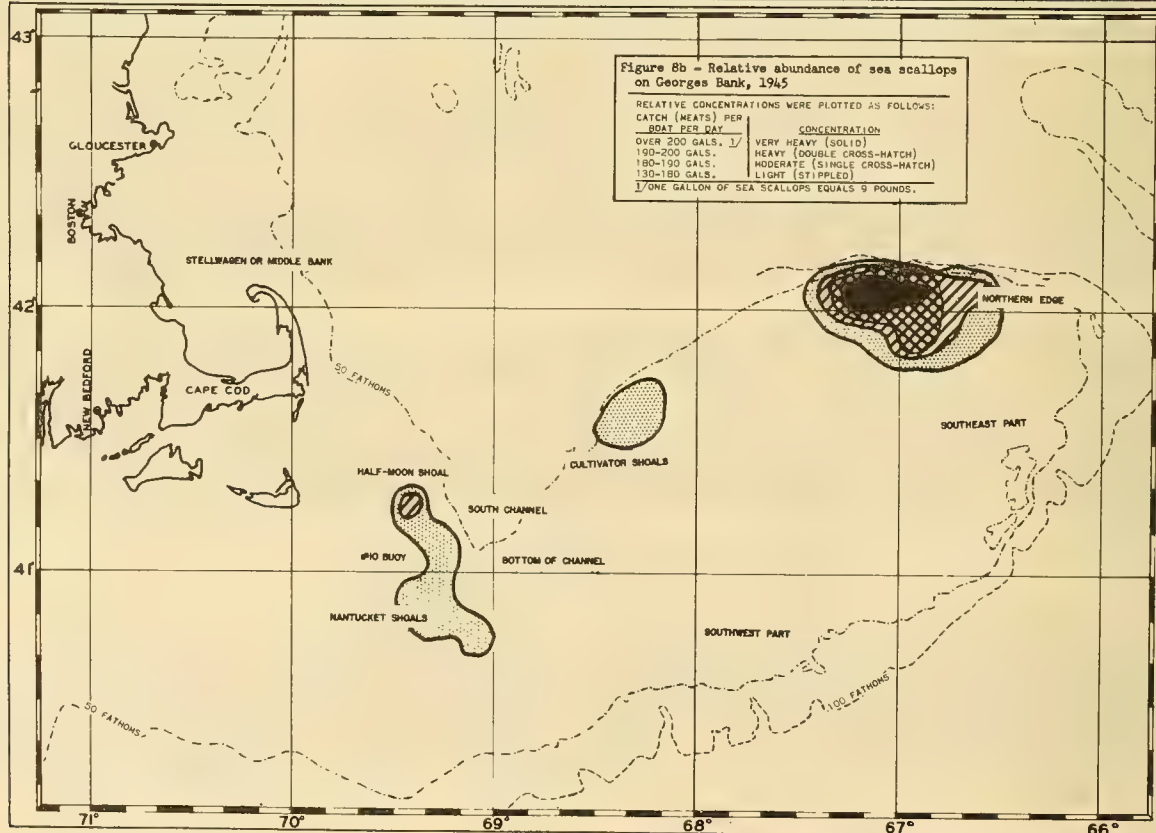
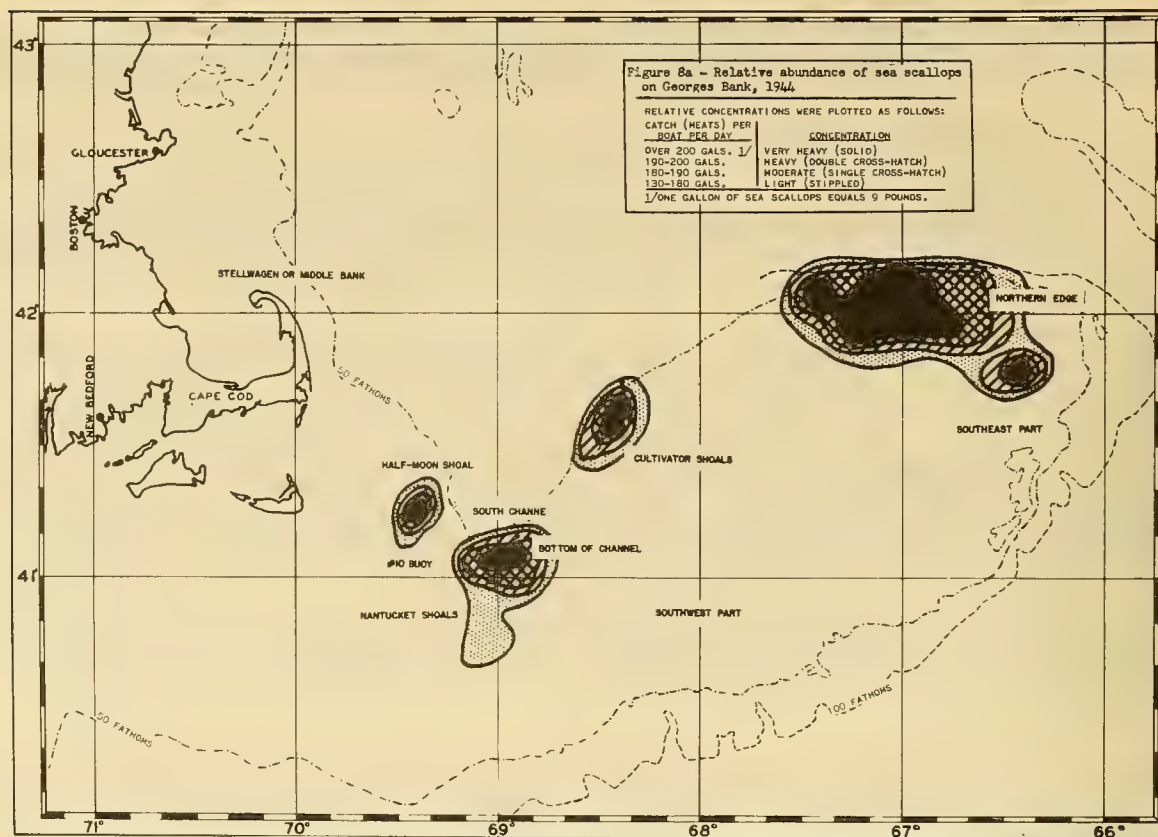
There is no evidence, however, that any areas were overfished during this period. If one area could not provide the catch limit in a few days' fishing, other areas were found that could. Thus the effort in any one area was adjusted to its productive capacity. The result is that catch-per-day was maintained for all important areas.

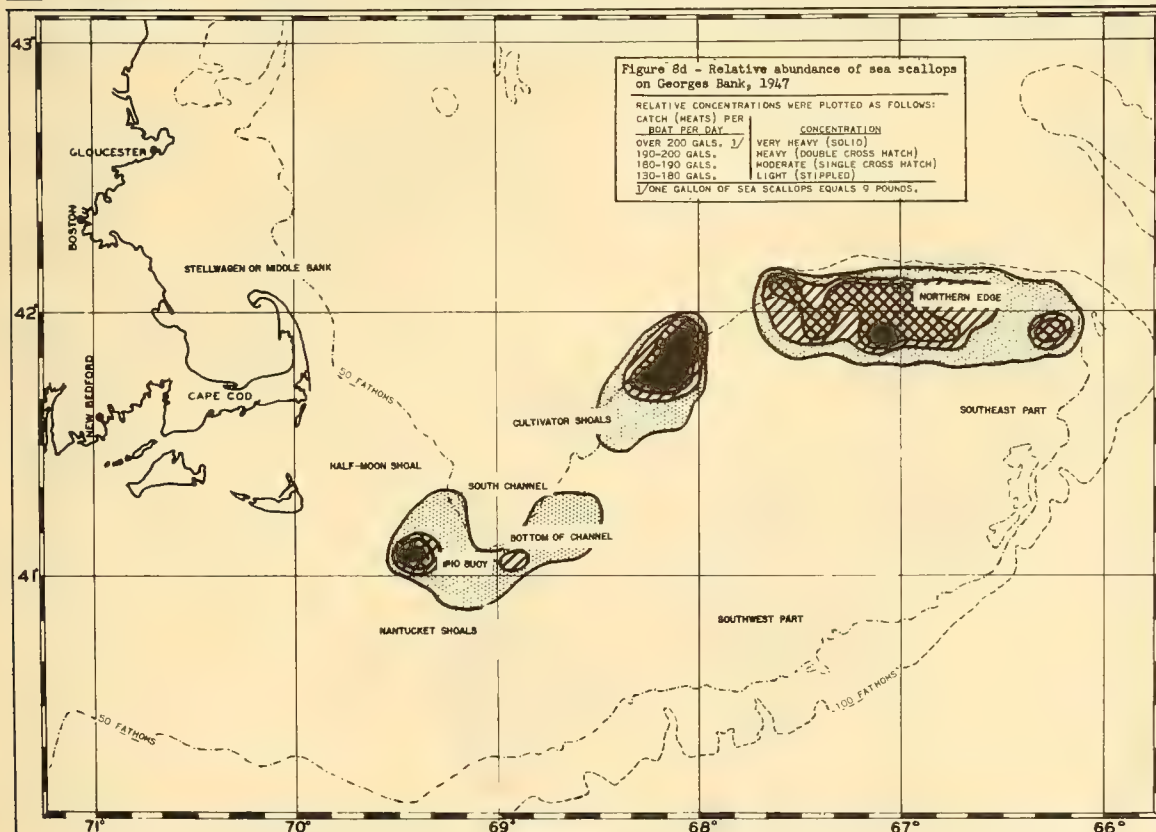
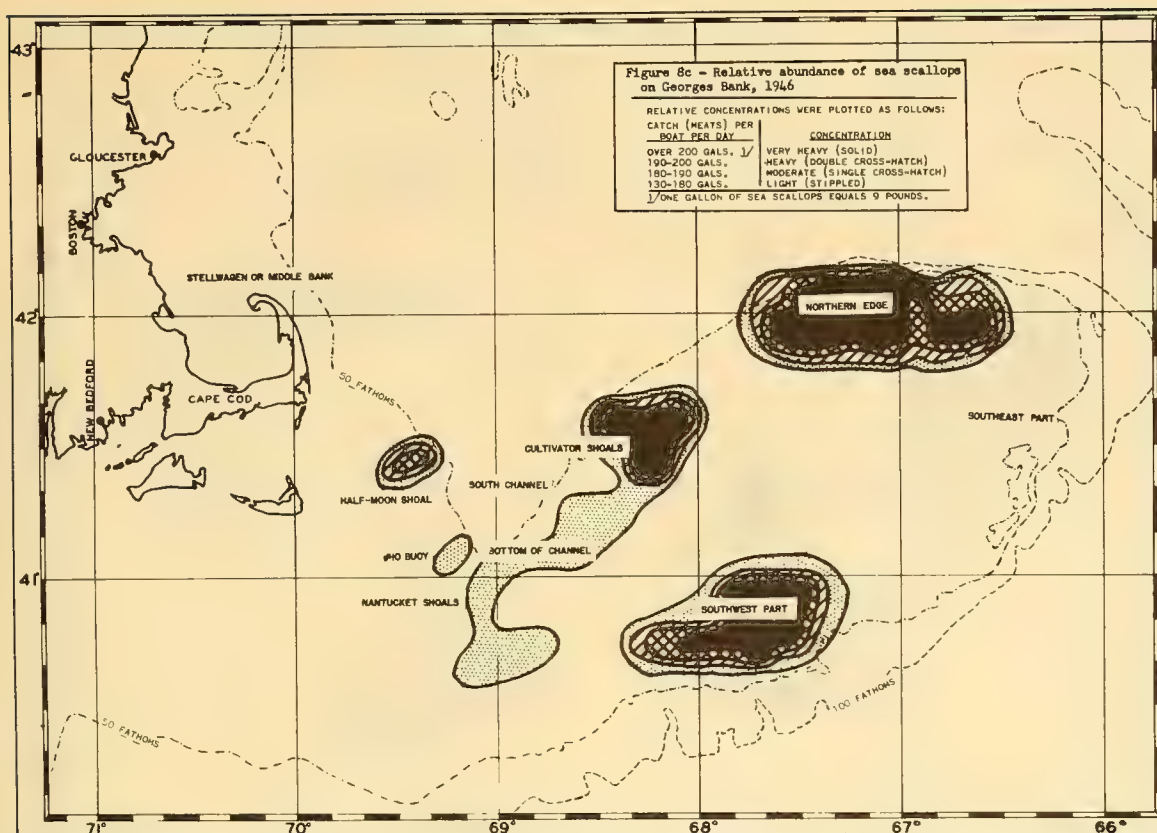
The relative abundance of scallops in the area fished by the New Bedford fleet during the nine-year period are shown graphically in figures 8a-8i. In the analysis of the interview data, catch per day was computed for each unit area (areas bounded by 10 minutes of latitude and 10 minutes of longitude). These figures (8a-8i) show very clearly how the areas fished fluctuated from year to year. In no two years were exactly the same beds fished. There was a constant shifting from one area to another but Georges Bank as a whole maintained its productive capacity (with a slight recession in 1947 and 1948).

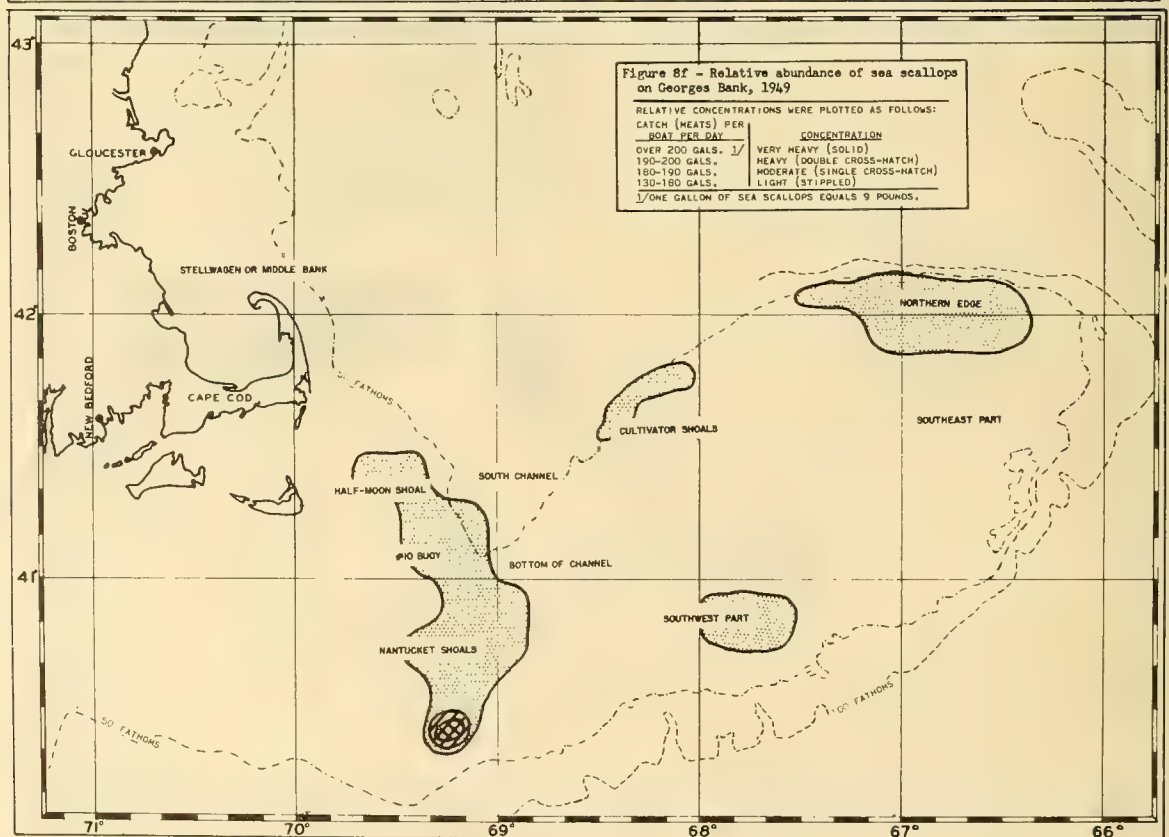
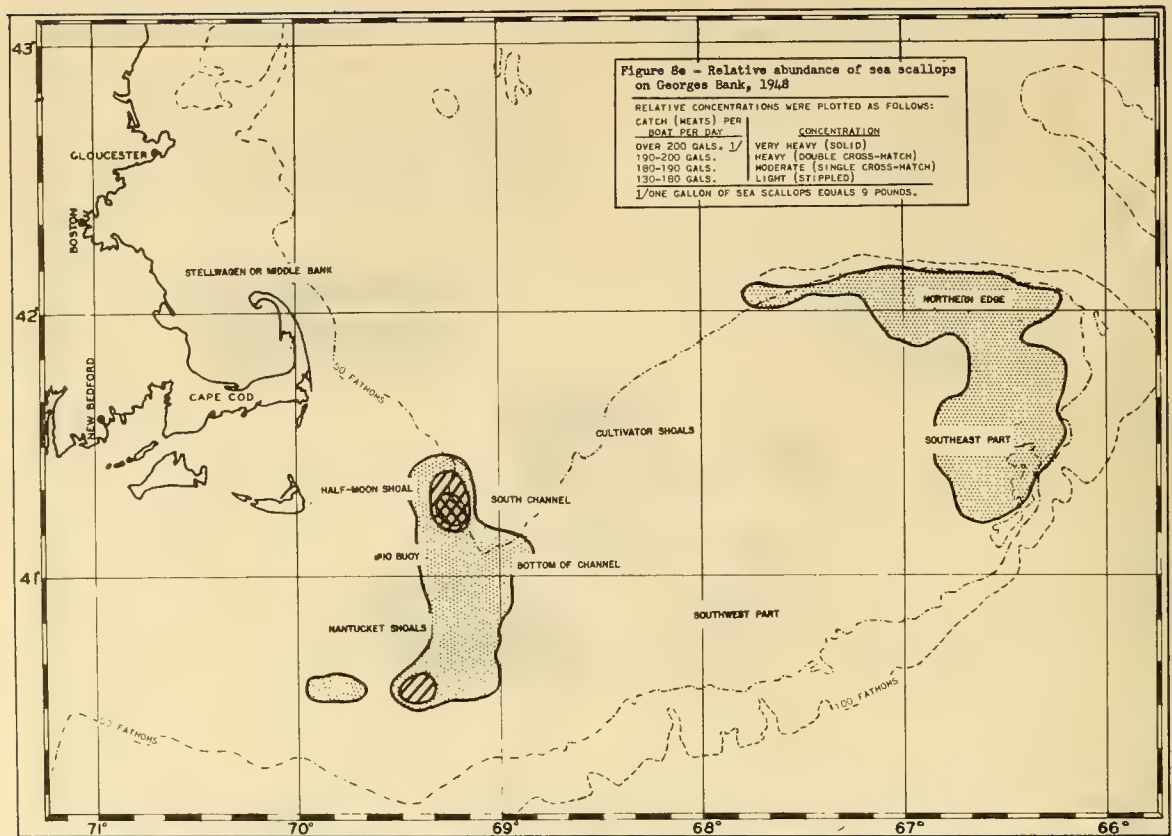
The only conclusion that can be drawn from the above studies is that there has been no over-all depletion of scallops on Georges Bank and nearby areas. Although individual beds may have been fished out, there have always been other beds available to insure all vessels catching their limits. The value of the catch limit in the conservation of the sea scallop cannot be assessed at this time. Whether the banks could have withstood greater fishing pressure during the past nine years will always be a matter of conjecture.

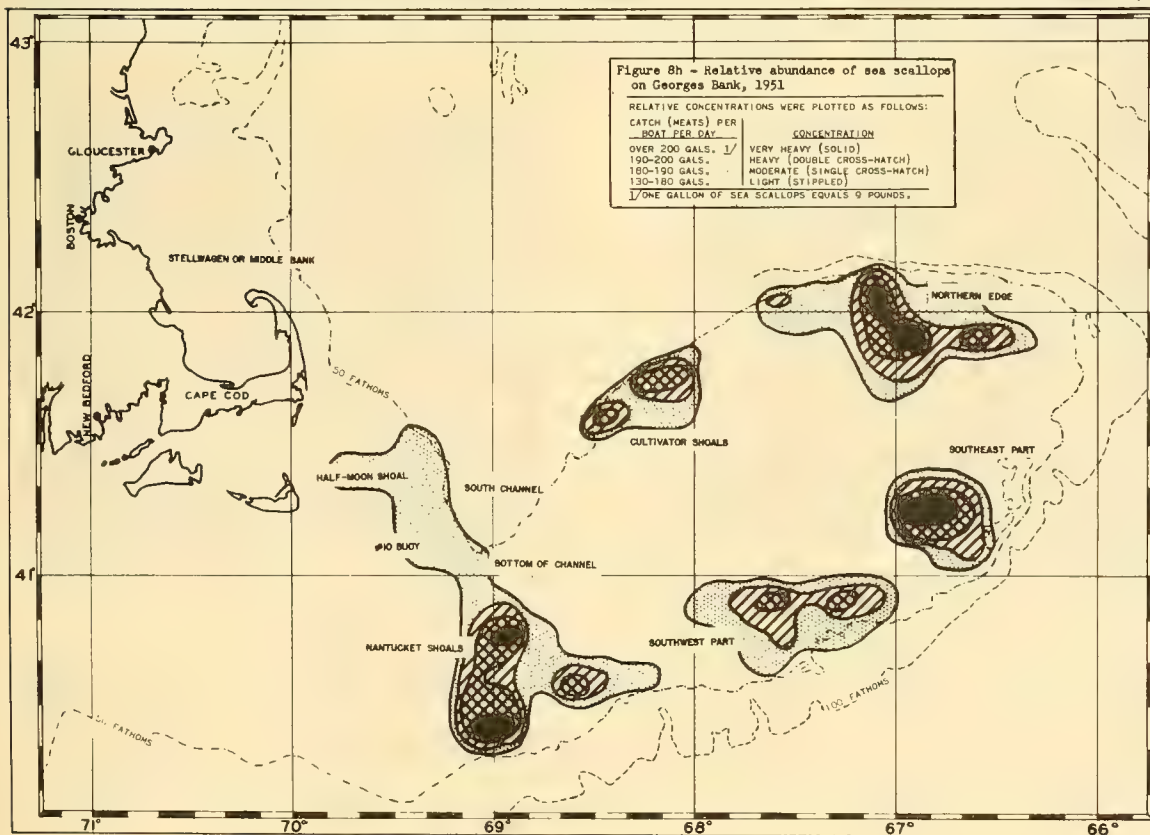
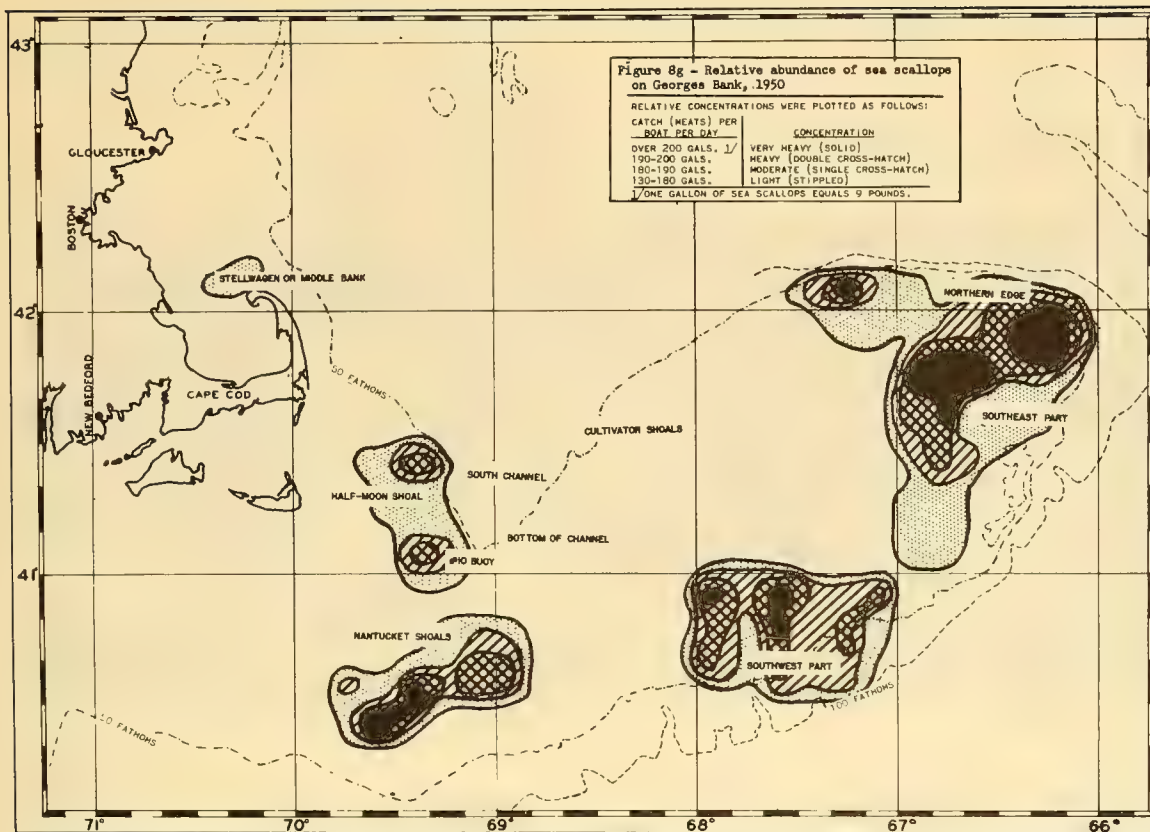
THE FUTURE OF THE SCALLOP FISHERY

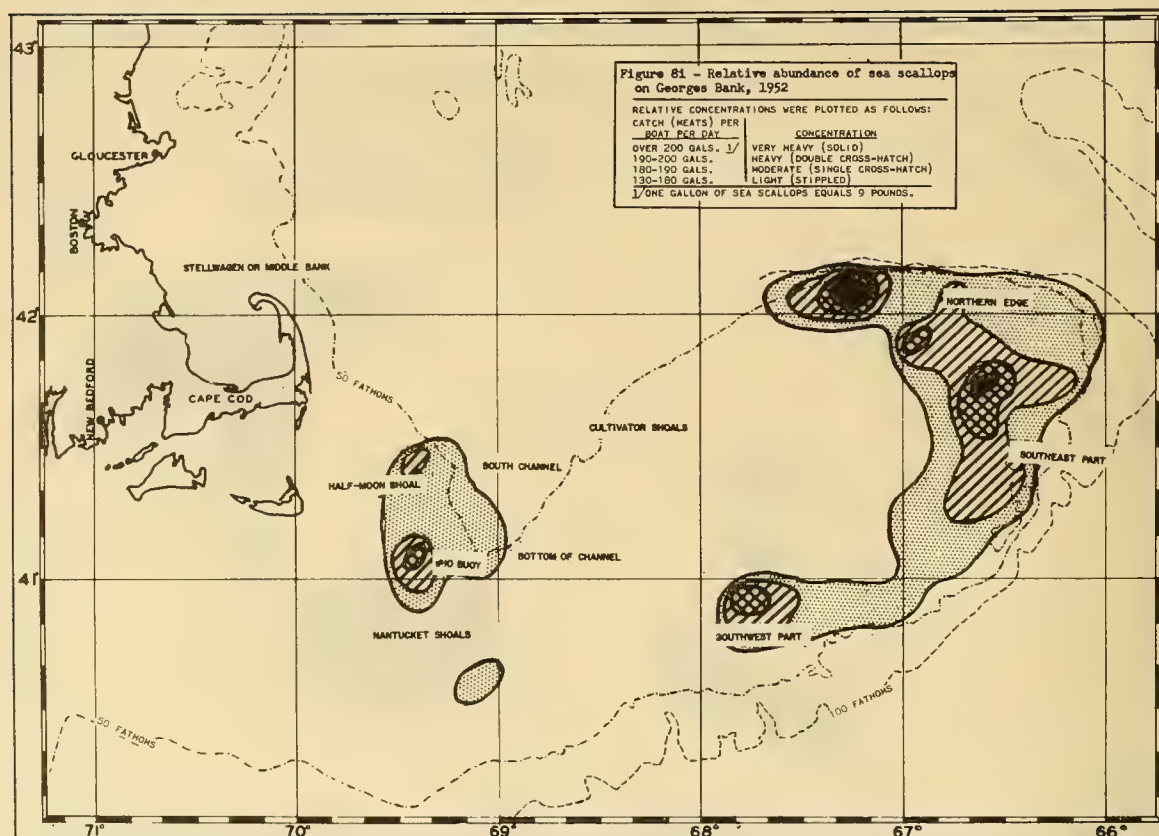
These studies of catch and effort records show that there has not been any serious depletion of scallop grounds up to 1953. The question of how long the beds can withstand present fishing intensity or whether they can withstand an expanded fishery cannot be answered from catch and effort statistics alone. To answer these questions it is necessary to have certain biological facts concerning the species. Unfortunately the necessary facts are lacking in the case of the Georges Bank scallop fishery.











The Canadians have learned much about the Digby scallops (Dickie 1950, 1951, 1952, and Medcof 1948, 1952) but this information cannot be applied to the same species in other areas. As the result of these studies, there is reasonably good information available on growth rates, age composition of the stock, catches, and fishing effort for the Canadian fishery.

Canadian scientists have found it possible to relate changes in landings directly to changes in abundance, and abundance in turn to variation in bottom water temperature. Periods of high and low abundance correspond fairly well with periods of warm and cold water, respectively, indicating that water temperature during the spawning season is a major factor in regulating the abundance of seed scallops produced in any year and landings of the fishery years later when these scallops reach commercial size. Canadian biologists claim they will be able to forecast periods of high and low abundance.

The Canadians also claim that protection of small scallops maintains the yield of the fishery at a higher long-term level than would unrestricted fishing. Canada has prescribed a legal size limit of 4 inches (shell diameter) for many years. This limit has proved difficult to enforce because scallops are shucked at sea and the shells discarded. Canadian scientists have, therefore, begun work on scallop savings gear to facilitate the escape of undersized individuals.

Posgay (1950) has summarized our knowledge of the biology of the Georges Bank stocks. Basic information necessary for the conservation of the stocks is lacking.

The spawning season is uncertain. The sexes are separate and fertilization takes place in the water. Ripe males and females are found from early spring until

fall and can be induced to spawn in the laboratory, but the normal spawning time in nature in various areas remains to be determined. Posgay (personal communication) found spawning on Stellwagen Bank in September.

The fertilized eggs develop into a planktonic larva which drifts about with the currents. After a time it develops the characteristics of the adult and settles down on the bottom. It is important to know how long this larval life lasts



FIG. 9 - PREPARING SCALLOP MEATS FOR DEEP FRYING IN THE PLANT OF A LEADING NEW BEDFORD FIRM.

in order to determine how far the larvae might drift from their point of origin. This information is not available. It is certain however that beds regularly swept by currents are not self perpetuating. Posgay is of the belief that beds located on Stellwagen Bank are the result of spawnings along the Maine Coast and that spawn from Stellwagen Bank is probably carried out toward Georges Bank. He



FIG. 10 - CLEANED RAW SCALLOP MEATS OR PRE-COOKED SCALLOPS ARE PACKED IN CONSUMER-SIZE (10 OZ.) PACKAGES PRIOR TO FREEZING. AUTOMATIC WRAPPING AND SEALING MACHINE IN OPERATION.

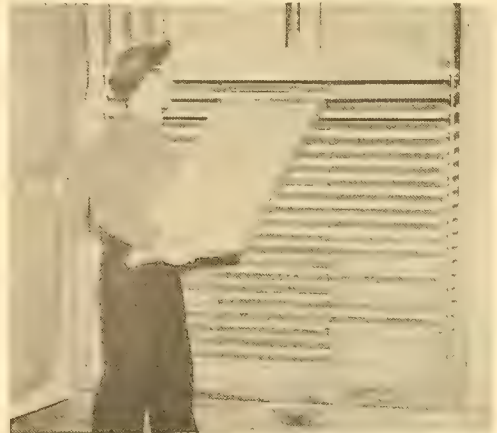


FIG. 11 - PLATE-TYPE QUICK FREEZER IS USED BY A LEADING NEW BEDFORD FIRM FOR FREEZING CONSUMER PACKAGED SCALLOP MEATS.

states, however, that beds on Georges Bank may be self perpetuating because of a large circular eddy which develops there in the summer which might tend to hold the larvae there until they assume the adult mode of existence.

The age and growth of Georges Bank scallops are imperfectly known. The concentric rings which in some molluscs (including the sea scallop in Canada) reveal the annual growth have in our sea scallops never been satisfactorily interpreted in relation to age. An alternative method of determining growth is by repeated examination and measurement of samples taken from the same population. This method might be used in the case of scallops, but would require the use of a research vessel for repeated samplings seasonally for several years.

Posgay is of the opinion that our sea scallop grows to a length of about 40 mm. ($1\frac{1}{2}$ inches) in the first year, 80 mm. ($3\frac{1}{8}$ inches) in the second year, 110 mm. ($4\frac{1}{3}$ inches) the third year, and thereafter grows more slowly. His estimates, however, are based on very sketchy evidence. We do not yet have sufficient information on growth to hazard an opinion on how long it would take a new set to reach commercial size.

Conversely, we do not know the natural mortality rates of these shellfish. Should they be fished as soon as they are of marketable size or would it pay to leave them to grow a little larger? Without this information we cannot recommend management procedures.

The importance of motility in scallops has always been of interest. Scallops can swim quite actively by clapping their shells together. The young appear to be more active than older individuals. The scallop beds seem to be on rather loose sand, in depressions in a level surface, on the edge of a shoal, or where a sloping surface becomes steeper (Posgay 1950). Whether sea scallops actively seek such places or are concentrated there by currents is not known.

There is a belief among some fishermen that scallops have a tendency to congregate and that beds will recover if left undisturbed for a period of time. A closed season is sometimes advocated on this basis but there is no experimental evidence to substantiate this opinion. We cannot at this time predict the effect of a cessation of fishing.

An extensive tagging program might shed some light on problems of growth and migration. No large-scale project has been undertaken, although Baird (1952) tagged 2,000 scallops in the past two years and has had some returns. His results are not available. Members of the Fish and Wildlife Service tagged 198 specimens on Southwest Georges in 1949 and 200 in 1950. Only one tag has been recovered to date. The tagged specimen was taken near its release point about 2 years after tagging. It had grown $3\frac{3}{4}$ -inch.

SUMMARY

United States landings of sea scallops (meats) increased from about 2 million pounds in 1929 to about 20 million pounds in 1950, and then decreased to about 17 million pounds in 1952.

Most of the postwar production of sea scallops has been landed at the port of New Bedford, Mass. An analysis of catch and effort data collected at this port from 1944 to 1952 reveals that there was no serious depletion of scallops on Georges Bank and nearby areas during that period.

The future of the scallop fishery is uncertain. The biology of the scallops fished by United States vessels is too imperfectly known to form the basis of any predictions of the effects of different intensities of fishing.

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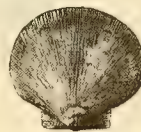
FROZEN SCALLOPS

DO YOU KNOW THAT...

A total of 4,112,000 pounds of scallop meats (includes both sea and bay scallops) were frozen in the United States during 1952--slightly less than the 4,705,000 pounds frozen in 1951.

Of the total amount frozen in 1952, 3,481,000 pounds were frozen in the New England States, 536,000 pounds in the Middle Atlantic States, 74,000 pounds in the South Atlantic States, and the balance in the South Central and Pacific States.

The amount of scallop meats packed and frozen in consumer-size packages in 1952 amounted to 3,692,000 pounds--a substantial increase over the 2,546,000 pounds packed in 1951. (Included in these totals are breaded and cooked scallops.)



SEA SCALLOP
(*Pecten magallanicus*)

SALMON TAGGING BY THE 1952 JAPANESE NORTH PACIFIC FISHING EXPEDITION

By C. J. Burner*

The Japanese re-entered the salmon fisheries of the North Pacific Ocean west of longitude 175° W. during 1952^{1/} with a fleet of 3 motherships and 50 catcher boats. Accompanying and patrolling the fleet were three fully-equipped and heavily-staffed oceanographic-exploratory research vessels of the Japanese Fisheries Agency. These ships ranged 400 miles or more from the mothership in all directions. Their purpose was to keep the fishing fleet within the area of operations authorized by the Japanese Government and to recommend fishing areas on the basis of abundance of plankton and suitable temperatures. Thus, in 1952 the Japanese fleet fished south of the Aleutians because the sea north of the chain was considered too cold. In addition to standard oceanographic equipment, the three vessels carried nets and long lines for exploratory-fishing and salmon-tagging operations.

The tagging experiments done by the Japanese, while limited and inconclusive, clearly demonstrate that salmon can be taken in numbers and good enough condition for marking or tagging on the high seas.

Since a Bering Sea and North Pacific tagging experiment to determine the degree of mixing or demarcation of Asiatic and Alaska stocks of salmon is being considered by the U. S. Fish and Wildlife Service, the methods and results of the Japanese tagging are of considerable interest. A summary of the results of the tagging done in the North Pacific in 1952 was prepared by the Japanese Fisheries Agency and forwarded by William C. Neville, Fisheries Attache at the United States Embassy at Tokyo, Japan.

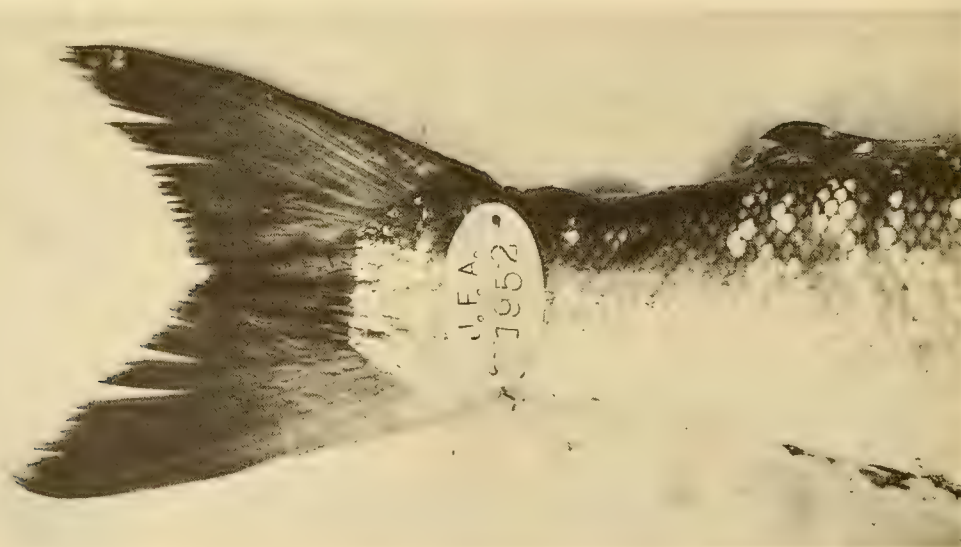


FIGURE 1 - METHOD OF ATTACHMENT OF JAPANESE CAUDAL PEDUNCLE TAG.

*ASSISTANT CHIEF, PACIFIC SALMON INVESTIGATIONS, BRANCH OF FISHERY BIOLOGY, U.S. FISH AND WILDLIFE SERVICE, SEATTLE, WASH.

^{1/}FOR A FULL ACCOUNT OF THIS EXPEDITION SEE FUKUHARA, F. M.: "JAPANESE 1952 NORTH PACIFIC SALMON-FISHING EXPEDITION," COMMERCIAL FISHERIES REVIEW, VOL. 15, NO. 2 (FEBRUARY 1953).

According to the report, 2,419 salmon were tagged between May 20 and June 18, 1952. Of this number 1,175 were chum salmon (*Oncorhynchus keta*), and 1,244 were red salmon (*Oncorhynchus nerka*). The tag used was a red (on red salmon) and a pink (on chum salmon) celluloid oval stamped with the letters JFA (Japanese Fisheries Agency), the year, and a serial number on the reverse side. It was attached to the fish with a 0.4 mm. silver-coated copper wire so that it encircled the caudal peduncle like a bracelet (see fig. 1). The tags are "dished" slightly to conform to the body curve of the fish.

The size of the fish tagged is given as 45 cm. to 65 cm., with a 55 cm. mean, on the basis of "forked length." This is for both species. It is possible, therefore, that all salmon tagged were mature and in the spawning year. No further data are given.

The Agency reports that gill nets were used to capture the fish prior to tagging. However, in conversations aboard the *Tenyo Maru*, the United States biologist F. M. Fukuhara obtained the distinct impression that long lines were also used, and that salmon thus caught were in much better condition for tagging. The Agency reports that long lines were fished, found unsuccessful, and not used for actual tagging. Dates and locations of tagging are given in the table.

Of the 2,419 salmon tagged, three fish were actually recovered in the Japanese nets, but one of them escaped. The two recaptures were chum salmon tagged on June 2

Date	Place		Date	Place	
	Latitude	Longitude		Latitude	Longitude
May 20	51°54' N.	179°56' W.	June 4	50°47' N.	179°05' W.
22	50°08' N.	177°55' W.	5	50°50' N.	179°31' W.
23	49°46' N.	179°00' W.	9	51°07' N.	178°15' W.
25	50°37' N.	179°41' W.	12	51°26' N.	179°32' W.
30	51°43' N.	177°47' W.	13	51°05' N.	179°13' W.
June 1	51°26' N.	177°52' W.	14	51°10' N.	178°19' W.
2	50°20' N.	178°00' W.	15	51°17' N.	176°09' W.
3	50°31' N.	178°23' W.	18	52°21' N.	172°49' W.

NOTE: DATA ON THE NUMBER OF FISH TAGGED AT EACH LOCATION NOT YET AVAILABLE.

and retaken on June 5 at the following locations: Tag No. 3 (pink color) at 50°29' N. latitude, 177°45' W. longitude; and Tag No. 1206 (pink color) at 50°28' N. latitude, 177°45' W. longitude. Both fish swam approximately 14 miles in a northwesterly direction toward Kiska Island before recapture, assuming straight-line movement.

Two tags (numbers unknown) were reported on red salmon passing through the weir at Egegik River, Bristol Bay, on July 1 and July 7, respectively. These tags were not recovered, but the detailed description given by the weir watchman gives some indication that the tags were placed on the fish by the Japanese Fisheries Agency a month or so earlier and about 1,000 miles away.

No conclusions are drawn by the Agency or by the Service. The few returns and the short distance traveled by chum salmon preclude any attempt to define the migratory behavior, or to distinguish the stocks of salmon in the North Pacific Ocean.

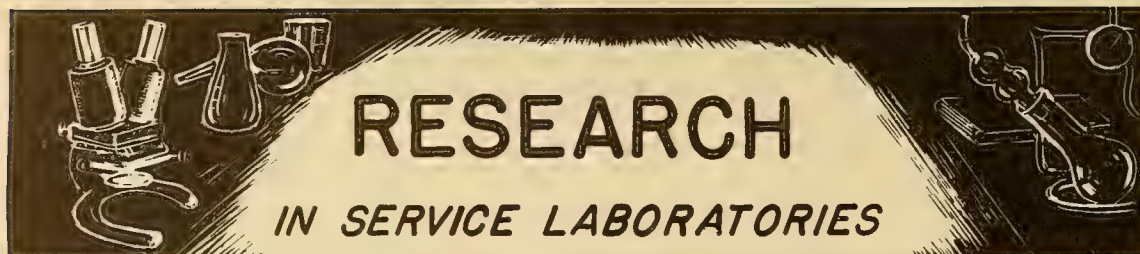
CORRECTIONS

The following errors occurred in the article "Japanese 1952 North Pacific Salmon-Fishing Expedition" by Francis M. Fukuhara, *Commercial Fisheries Review*, vol. 15, no. 2 (February 1953):

Page 1, paragraph 1, line 5 - "north of Atka Island" should read "west of Atka Island"

Page 4, last paragraph, line 3 - "400 miles south of Kiska" should read "90 miles south of Kiska."





Progress on Projects, April 1953

REFRIGERATION: Freezing Fish at Sea, Defrosting, Filletting, and Refreezing the Fillets: **VESSEL OPERATIONS:** The Delaware remained dry-docked at the shipyard in Chelsea, Mass., during which time it was painted and overhauled and the brine-freezer tank was modified.

LABORATORY STUDIES: Further tests were carried out on dipping fillets in brine. From a local trawler 600 pounds of gutted scrod haddock were obtained and stored in ice at the laboratory. At intervals of 1, 5, and 10 days, one-third of the lot was filleted, dipped in brine, packaged, frozen, and later examined (table 1).

Table 1 - Effect of Dipping Haddock Fillets in Brine								
Description of Samples			Weight Increase of Fillets		Salt (as NaCl) in Fillets			
Sample	Group No.	Concentration of Brine Dip	Percent	Percent	Free Drip of Fillets		Press Drip of Fillets	
		Percent Salt By Weight			Percent	Percent	Percent	Percent
Haddock, gutted, iced for one day	1	0.0	2.7	0.19	4.1	24.0	-	25
	2	0.8	4.1	0.25	3.2	25.8	5.2	25
	3	5.0	3.8	0.50	3.7	32.0	4.8	26
	4	10.0	3.5	0.79	1.5	21.3	5.0	25
	5	15.0	4.3	1.33	1.8	14.4	6.3	24
	6	20.0	4.5	1.91	1.5	14.8	6.3	24
	7	26.0	4.5	2.15	1.2	15.0	6.3	24
Haddock, gutted, iced for five days	1	0.0	3.4	0.20	5.2	31.0	4.9	24
	2	0.8	3.9	0.24	6.5	32.4	3.9	23
	3	5.0	4.9	0.58	3.3	30.7	4.8	26
	4	10.0	5.8	0.92	2.3	25.9	4.6	25
	5	15.0	5.8	1.23	1.1	24.9	5.2	25
	6	20.0	5.6	2.03	1.5	15.6	6.3	17
	7	26.0	5.9	2.78	1.4	14.7	5.6	17
Haddock, gutted, iced for ten days	1	0.0	3.2	0.19	1.3	29.7	3.5	25
	2	0.8	3.1	0.23	1.2	27.1	3.9	26
	3	5.0	3.8	0.59	1.0	30.6	3.7	24
	4	10.0	4.8	0.95	0.83	25.7	4.2	26
	5	15.0	4.8	1.37	0.31	20.3	4.7	22
	6	20.0	5.1	1.84	0.37	18.7	5.0	25
	7	26.0	4.9	2.33	0.29	16.6	5.7	24

1/TENDEROMETER VALUE VARIES INVERSELY WITH TENDERNESS OF FILLETS.

The tests indicated that storage of the fish in ice for various periods prior to filleting has little effect upon the fillets dipped in brine from the standpoints of salt absorption and weight increase, or upon tenderometer value, press drip, or press drip solids of the thawed frozen fillets. The dipped fillets from fish stored in ice for 10 days upon freezing and thawing showed lower apparent free-drip values as compared with the dipped fillets from fish stored in ice for 1 or 5 days.

The effect of brine temperature and time of immersion on the absorption of salt by whole scrod haddock during the freezing process was studied on a laboratory scale. Whole scrod haddock were procured from a local trawler about 24 hours

after the fish were landed on the vessel. The fish were held in a 23-percent salt solution for one hour at various temperatures. The effect of brine temperature on the penetration of salt into the fish is shown in table 2.

Table 2 - Salt Penetration Into Whole Scrod Haddock Held in 23-percent Salt Solution for 1 Hour at Various Temperatures

Sample	B r i n e		Concentration of Salt in the Fish Flesh	
	Concentration	Temperature	First 1/4-Inch	Second 1/4-Inch
	Percent Salt	Degrees F.	Percent	Percent
Whole scrod haddock	23	-6	0.37	0.15
		0	0.51	0.19
		5	0.55	0.24
		10	0.64	0.23
		15	1.15	0.24

The results indicate that freezing the whole scrod haddock at 10° F. or below produces much lower salt penetration in the fish than freezing at temperatures above 10° F.

Table 3 shows the effect of immersion time of the fish on the salt penetration. The results indicate an initial high rate of salt penetration in the first 1/4-inch of flesh during the first hour of freezing. Further absorption continued at a much reduced rate, particularly at the lower temperatures.

Table 3 - Absorption of Salt in Whole Scrod Haddock Immersed in 23-percent Salt Solution at Various Temperatures for Varying Periods

Sample	Temperature of the Brine	Immersion Time	Concentration of Salt in the Fish Flesh	
			First 1/4-Inch	Second 1/4-Inch
	Degrees F.	Hours	Percent	Percent
Whole scrod haddock	5	1	0.55	0.24
		1½	0.71	0.23
		2	0.91	0.31
		3	1.17	0.21
		4	1.22	0.20
		24	2.09	0.84
	10	1	0.64	0.23
		1½	0.87	0.30
		2	1.10	0.26
		3	1.25	0.35
		4	1.29	0.24
		24	-	-
	15	1	1.15	0.24
		1½	-	-
		2	1.27	0.28
		3	-	-
		4	1.39	0.21
		24	5.15	3.01

Results of prolonged immersion-freezing in 23-percent salt solution is shown in table 4.

Thawing was first noticeable as a very slight softening of the skin of the fish. As salt continued to penetrate into the flesh, thawing or softening occurred at greater depths. Shrinkage, due apparently to loss of water from the fish, was observed after 48 hours of immersion of the fish and eventually became so great as to cause outlines of the muscular striations to appear on the skin. After four

days the tail section became pliable; this condition spread slowly to about one-third the length of the fish at the time the test was terminated. The fish immersed for 24 hours would not take a glaze due to the high salt content of the surface layer of the fish.

Table 4 - Effect of Prolonged Immersion-Freezing on Whole Scrod Haddock					
Treatment of Sample	Immersion Time	Initial Weight of Fish	Weight Loss of Fish	Depth of Thaw or Softening	Salt Content of the Flesh
	Days	Grams	Percent	Inches	Percent
Whole scrod haddock were immersed in 23-percent salt solution at 5° F.	1	2,320	0.8	0	1.01
	2	2,330	1.7	1/32	2.22
	4	2,635	1.7	3/32	4.68
	6	2,215	3.1	5/32	7.40
	8	2,430	1.9	7/32	6.21
	10	1,845	8.1	9/32	10.58
	12	2,050	1.7	9/32	10.1

(Boston)

* * * * *

Freezing, Glazing, and Thawing Salmon to be Canned: Examination was made of four lots of canned sockeye salmon prepared last fall from fresh (unfrozen) fish, and from frozen fish containing varying amounts of added salmon oil. The purpose of the test was to determine the amount of curd formation and appearance of the final product when salmon oil is added to canned salmon (prior to sealing and processing) prepared from frozen fish. Six 1/2-flat cans of each of the following four lots of canned sockeye salmon were examined:

1. Prepared from brine-frozen fish--salt added.
2. Prepared from brine-frozen fish--salt and 3 milliliters of salmon oil added to each 1/2-flat can.
3. Prepared from brine-frozen fish--salt and 6 milliliters of salmon oil added to each 1/2-flat can.
4. Prepared commercially from fresh (unfrozen) fish--salt added.

The results are shown in table 1.

Table 1- Results of Tests on Canned Alaska Sockeye Salmon Prepared from Fresh (Unfrozen) and Frozen Fish (Frozen fish were packed with and without added oil. Six cans from each lot were examined.)								
Lot No.	Description of Canned Sample		Can Size	Characteristics of the Canned Product				
				Volume of Aqueous Liquid	Volume of Free Oil	Drained Weight	Amount of Curd	Penetrometer Value ¹
	Raw Material	Materials Added to Can Salt Salmon Oil Milliliters		Milliliters	Milliliters	Grams		Millimeters
1	Brine-frozen	yes none	1/2-flat	28.4	1.6	203	{ Moderate	12.3
2		yes 3	1/2-flat	28.8	2.8	206		12.8
3		yes 6	1/2-flat	32.8	5.3	203		13.7
4	Fresh (unfrozen)	yes none	1/2-flat	38.9	2.4	188	Trace	15.8

¹/PENETROMETER VALUE VARIES INVERSELY WITH THE FIRMNESS OF THE PRODUCT.

In comparison with lot 4 (prepared from fresh fish), lot 1 (prepared from brine-frozen fish) had on the average a smaller volume of free aqueous liquid and free oil, and a lower penetrometer reading (or firmer texture). Lot 4 possessed a natural salmon flavor and odor and had only a trace of curd. Lot 1 had lost some

of the natural flavor and odor and some of the samples showed incipient rancidity; had a firm texture, which was not considered too objectionable; and had a moderate amount of curd, which lowered the appearance rating. Although a definite difference in texture between the two lots (1 and 4) was found by both organoleptic examination and penetrometer tests, some of the difference may have been due to the method of packing. Lot 1 was hand packed while lot 4 was machine packed commercially.

Adding natural salmon oil to each can (lots 2 and 3) increased the amount of free oil in the final product; however, the curd appeared in more compact layers and made the appearance of the fish in the can less desirable.

* * * * *

ANALYSIS AND COMPOSITION: Cooperative Work with the A.O.A.C. on the Determination of Oil in Fish Meal: Work has been resumed on this project in an effort to develop a simple and rapid procedure for the determination of oil in fishmeal. Chemists in the industry have indicated that the acetone extraction method, developed some time ago and now a tentative A.O.A.C. method, consumes too much time. In the earlier work, it was found that acid hydrolysis did not completely digest the fish meal to the extent that it does fish flesh. The tests now under way are designed to determine whether or not the acid hydrolysis procedure can be improved to provide complete hydrolysis of the meal and effect more accurate oil determinations. Preliminary tests indicate that more complete hydrolysis of the meal is facilitated by grinding the meal exceedingly fine and using a high ratio of acid to meal.

(Seattle)



CEMENT FROM SEA SHELLS

A plant designed specifically for the production of cement from coquina (periwinkle) shells has been constructed at Flagler Beach, Florida, on a 10,000-acre site, to produce 10,000 to 15,000 barrels of cement per day from 3,000 tons of shell. Borings in the area indicate the presence of enough accumulated shell to supply a plant of the size described for at least 100 years. (Chemical and Engineering News, May 26, 1952)

TECHNICAL NOTE NO. 26--GLAZING BRINE-FROZEN SALMON

Frozen whole fish in cold storage are usually protected by an ice glaze. This glaze, a thin shell of ice around the fish, is formed when frozen fish are given a short dip in chilled water. The purpose of the glaze is to serve as a barrier against the loss of moisture and to prevent air from coming into contact with the fish. It thus protects the fish from dehydration and retards the rate of oxidative deterioration, including the development of rancidity and rusting.

There are several factors that can interfere with the formation of a good glaze. Patches of oil may form on the surface of the fish and cause the dip water to run off these areas before it can freeze and adhere. Similarly, slime and blood may also contribute to a poor glaze. In brine-frozen fish the presence of absorbed salt can make glazing difficult. The salt lowers the freezing point of the water glaze, and a good glaze may not be possible in the range of about 0° F. to 10° F., the storage temperatures commonly used commercially.

Recently, inquiries have been received regarding the feasibility of glazing brine-frozen fish. In order to observe the nature and extent of the problems involved in glazing such fish, a brief experiment was conducted. Brine-frozen salmon were used as they were readily available from the increasingly large number brought from Alaska to the Pacific Northwest for canning.

Red salmon that were caught in Bristol Bay during the 1952 fishing season were obtained from one of the freezer ships unloading at Seattle, Washington. These fish had been frozen by immersion for about 12 hours in a saturated brine solution at approximately 5° F. and then transferred to a dry hold for storage at 5° F. When the fish were obtained from the vessel, they were slightly thawed at the outer surface, but otherwise appeared to be in good condition. Ten of the fish were placed in storage at 0° F. and ten at -20° F.

The ten salmon that had been stored at 0° F. for several days were glazed by immersing in water cooled to around 34° F. They were allowed to age for several hours at 0° F., and then the glaze was examined and evaluated. The glaze taken by the fish varied from good to poor in both quantity and quality. On some parts of the fish the glaze was "soft" (not hard frozen) and rubbed off easily; this probably was due mainly to a high salt concentration in that particular area. In other small areas there was no glaze whatever because the water had run off before it could freeze. Only 2 out of 10 fish took a complete glaze. All ten fish were then sprayed with water and scrubbed with a brush to remove some of the salt, oil, blood, and slime from the surface. This washing increased slightly the amount of glaze that the fish would take; however, the glazing as a whole could not be considered satisfactory.

To determine whether these brine-frozen salmon would take a good glaze at a lower temperature, ten other fish that had been stored at -20° F. were dipped in cold water and then returned to the -20° F. room. All ten fish took a good glaze. Later, three of these fish were transferred to the 0° F. room and were examined the following day. Although the glaze was still intact, the ice had softened in some parts, particularly on the head. On contact, this soft ice easily fell away from the fish. In comparison, the glaze on the fish left in the -20° F. room was still hard. No tests were made at temperatures between 0° F. and -20° F.

SUMMARY

The salt absorbed by brine-frozen fish interferes with successful ice-glazing of fish at storage temperatures commonly used commercially (0° F. to 10° F.). The

glaze taken by brine-frozen Alaska red salmon at 0° F. was not considered satisfactory; however the glaze taken at -20° F. was good. Since glazing of the brine-frozen salmon does not appear feasible at the storage temperatures now used by the freezerships (about 5° F.), these fish will be more susceptible to dehydration and oxidative deterioration upon prolonged storage. It therefore is highly important to process these fish as soon after freezing as possible in order to have a good quality canned product.

--D. T. Miyauchi,
Fishery Products Technologist,
Fishery Technological Laboratory,
Branch of Commercial Fisheries,
U.S. Fish and Wildlife Service,
Seattle, Washington.



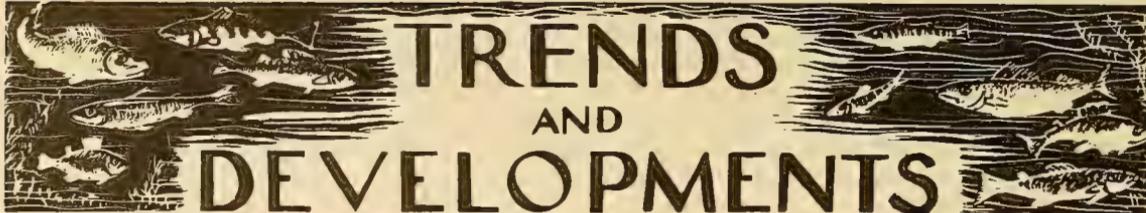
HOME FREEZERS EXPAND FROZEN FOOD MARKET POTENTIAL

Since the war, nearly 5 million home freezers have been sold with the result that around 12 percent of the nation's 42 million electrically-wired homes now have a freezer. According to a recent survey by Electrical Merchandising, 1,140,000 home freezers were sold in 1952, a 9 percent gain over 1951, when sales totaled 1,050,000 units. Also, the larger freezers are becoming more popular.

Several government and industry surveys have shown that a family with a home freezer almost invariably uses more frozen foods. In towns under 5,000 population, which often have no other local frozen-food distributors, many locker plants have gone "all out" to sell frozen food to home-freezer owners. A large number of the nation's 11,000 locker-plant operators feel that their business future lies in the success with which they can become the "frozen food center" of their communities.

The locker-plant associations and trade magazines have been doing a great deal to help locker-plant operators become "frozen food centers." Many operators have had difficulty in securing frozen foods at competitive prices, so a national trade magazine has started a directory service listing free of charge frozen-food packers interested in sales to locker plants. Eight companies selling fishery products are now included in this directory.

The U. S. Fish and Wildlife Service has been working with the locker plants, their national association, and their trade magazines, to call attention to the profit possibilities in the sale of frozen fishery products. The Service has found that many operators already handle fish and shellfish. However, with greater knowledge of fishery products and their availability, plus some merchandising tools, e.g., signs and recipe booklets, sales of fish by locker plants could be greatly increased.



TRENDS AND DEVELOPMENTS

Additions to the Fleet of Fishing Vessels

A total of 52 vessels of 5 net tons and over received their first documents as fishingcraft during March 1953--8 less than in March 1952. Washington led with 11 vessels, followed by Texas with 8 vessels, and Florida east coast with 6 vessels.

Vessels Obtaining Their First Documents as Fishing Craft, February and March 1953									
Section	March		Three mos. ending with March		February		Two mos. ending with February		Total 1952
	1953	1952	1953	1952	1953	1952	1953	1952	
	Number	Number	Number	Number	Number	Number	Number	Number	Number
New England	-	1	2	4	-	2	2	3	30
Middle Atlantic	4	2	4	9	-	5	-	7	26
Chesapeake	8	8	17	17	5	5	9	9	65
South Atlantic	7	7	19	26	4	8	12	19	89
Gulf	16	11	50	26	15	9	34	15	161
Pacific	12	18	21	34	5	9	9	16	203
Great Lakes	-	3	2	4	2	-	2	1	13
Alaska	5	10	10	24	3	11	5	14	88
Total	52	60	125	144	34	49	73	84	675

NOTE: VESSELS HAVE BEEN ASSIGNED TO THE VARIOUS SECTIONS ON THE BASIS OF THEIR HOME PORT.

In February 1953 first documents as fishing craft were received by 34 vessels of 5 net tons and over--15 less than in February 1952. Florida west coast led with 6 vessels, followed by Louisiana with 5 vessels, and Florida east coast, Virginia, Washington, and Alaska with 3 vessels each.



Alaska Fur-Seal Skin Prices Decline Sharply at Spring Auction

A sharp decline in prices characterized the semiannual auction of Government-owned fur-seal skins at St. Louis on April 13, the Secretary of the Interior announced. Bidding was spirited and there was a good attendance at the auction. A total of 24,400 skins from the Pribilof Islands, Alaska, was sold for \$2,084,191, or \$700,527 less than the Government receipts from the fall auction held October 13, 1952.

The average price for all fur-seal skins sold at the April auction was \$85.42 per skin, or \$19.58 under the October average of \$105.00.

Black skins, of which there were 7,000 offered, averaged \$100.52 per skin as compared with October's average of \$122.04. A total of 14,900 dyed "Matara" (brown) skins was offered and these skins sold for an average of \$82.67, or \$27.04 less than in October. A total of 2,500 "Safari" brown (a lighter brown) skins was offered and averaged \$59.51 per skin, as compared with \$69.14 in October.

In addition to the United States-owned skins, the Fouke Fur Company sold 4,978 Cape of Good Hope fur-seal skins for the government of the Union of South Africa. These skins averaged \$32.49 per skin, as compared with the October average of \$34.54.

California

STATE TAGS TUNA: A total of 1,638 tuna—1,139 yellowfin, 499 skipjack—were tagged by the California Department of Fish and Game on a 3½-months', 20,000-mile cruise on the commercial vessel Intrepid. The cruise was completed at Los Angeles on February 11. Three types of tags were used. Other major purposes for the cruise were to test the feasibility of carrying out tagging operations on a commercial fishing vessel; gain experience in commercial fishing methods; and collect post-larval specimens of yellowfin and skipjack tuna under a night light to further delineate the spawning range.

Two of the tagged yellowfin tuna have already been recovered, reports the Department of Fish and Game in a March 6 bulletin. One fish taken by a Peruvian purse seiner on January 17, 1953, three miles west of Mancora, Peru, had moved 34 miles south by west in 33 days from the spot tagged. The other fish, taken by the tuna clipper Santa Helena on January 17, 1953, five miles west of Culpepper Island in the Galapagos group had traveled 5 miles west in 49 days. Both fish were in good condition and showed no significant increase in length.

For all fish tagged, 96.7 percent of the yellowfin tuna were released in satisfactory condition and 92.4 percent of the skipjack. The skipjack were the more difficult of the two species to tag regardless of the type of tag used.

* * * * *

RESEARCH VESSEL "YELLOWFIN" FINDS ABALONE IN POOR CONDITION IN CHANNEL ISLAND REGION: Abalone in the Channel Island region of Santa Cruz and San Clemente Islands were found to be few in number, small in size, and poor in quality (most were infested with round worms). These were the findings of the research vessel Yellowfin of the California Department of Fish and Game. The vessel completed a two-weeks' cruise at Los Angeles on February 26. Dives were made in the Santa Cruz Island and San Clemente Island areas. Off San Clemente Island there was a greater concentration of abalone than off Santa Cruz. Compared to a similar survey in 1952, fish life and abalone were observed to be considerably less abundant.

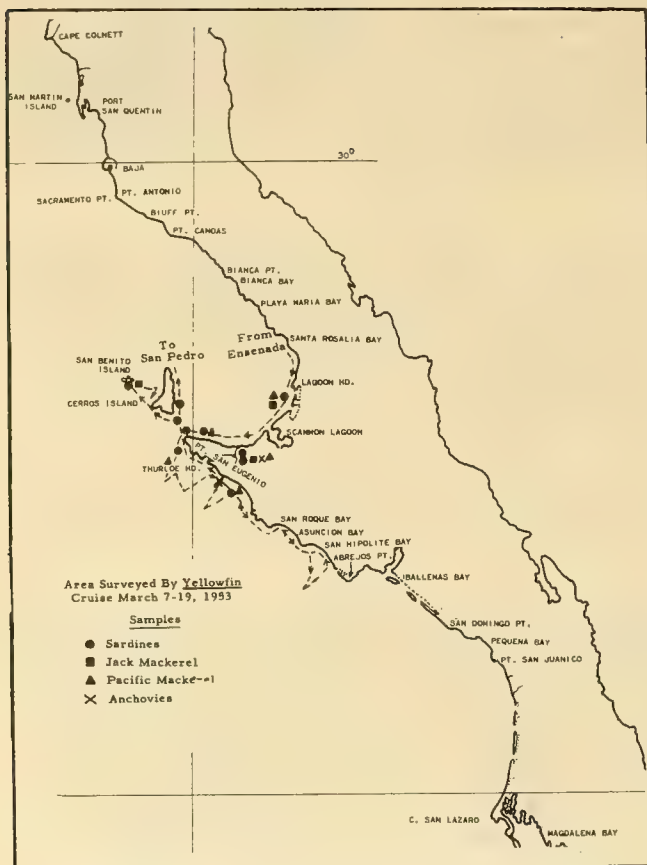
One day of the cruise was spent in underwater photography off San Clemente Island where conditions were judged favorable for this work. The results of these films were encouraging and it is planned to return later in 1953 for additional work, the California Department of Fish and Game announced recently. This was Cruise 2 of the Yellowfin for 1953.

This vessel's Cruise 1 (January 5-24, 1953) was a routine one for hydrographic research for the Cooperative Sardine Research Program. The purpose was to collect data for determining the oceanographic factors responsible for the behavior, spawning success, and survival of Pacific sardine. Operations were conducted in the coastal and offshore area between Pt. Conception and Cape Colnett.

* * * * *

"YELLOWFIN" STUDIES SARDINE ABUNDANCE OFF LOWER CALIFORNIA: A total of 68 schools of fish were spotted by the California Department of Fish and Game research vessel M/V Yellowfin on a 15-day 375-mile cruise completed at Los Angeles on March 20. The cruise was made to assess the abundance and distribution of spawning sardines; to obtain sardine samples for age determinations; to test the feasibility of using the Hardy Plankton Indicator in conjunction with the sardine surveys; and to study the spawning population of sardines and their environment off lower California. The area from Sebastian Vizcaino Bay to San Hipolito Bay, including the area around Cedros and San Benitos Islands, was scouted, an April 21 report from the California Department of Fish and Game states.

Of the 68 schools spotted, it was estimated that 36 were of sardines, and 25 of mackerel. Two samples of sardines and one of Pacific mackerel were obtained from the schools sampled. Thirty-nine light stations were occupied and yielded samples of sardines, Pacific mackerel, jack mackerel, and anchovies. Two samples of sardines were obtained from tuna clippers in Turtle Bay. All the sardine samples contained fish very near spawning.



AREA SURVEYED BY THE CALIFORNIA RESEARCH VESSEL YELLOWFIN IN CONJUNCTION WITH SARDINE ABUNDANCE STUDIES OFF LOWER CALIFORNIA.

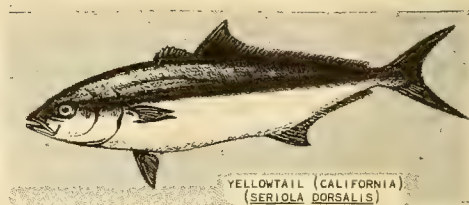
owned yacht Goodwill, chartered for this cruise, was used for this tagging operation.

Altogether five yellowtail (Seriola dorsalis) were caught by trolling. Four were tagged and one was retained for study. One large yellowtail was double tagged, using a Petersen disk and a nylon capsule tag. The others were tagged only with Petersen disks because of very rough waters, states the California Department of Fish and Game in an April 22 report.

The Hardy Plankton Indicator tested worked satisfactorily, but more studies are needed to develop a standard technique for interpretation of the results of the tows. In general, sardines in this area were not as abundant inshore as they have been during the fall months. They were more abundant from San Cristobal Bay northward to the area around Cedros Island, and in the southwest part of Sebastian Vizcaino Bay. Heavy weather prevented a survey of the adjacent offshore area.

* * * * *

YELLOWTAIL TAGGED: Rough weather off Guadalupe Island, Mexico, limited the tagging of troll-caught yellowtail by the California Department of Fish and Game on a 5-day cruise completed on April 14. The privately-



Federal Purchases of Fishery Products

FRESH AND FROZEN FISH PURCHASES BY DEPARTMENT OF THE ARMY, MARCH 1953: For the military feeding of the U. S. Army, Navy, Marine Corps, and Air Force, the Army Quartermaster Corps in March 1953 purchased a total of 1,329,751 pounds (valued at \$764,181) of fresh and frozen fishery products (see table). This was a decrease of 10.3 percent in quantity and 11.8 percent in value as compared with the previous month, and 44.0 percent in quantity and 30.8 percent in value less than in March 1952.

Purchases during January-March this year dropped 36.4 percent in quantity and 23.5 percent in value, compared with the corresponding period in 1952.

Purchases of Fresh and Frozen Fishery Products by Department of the Army (March and the First Three Months of 1953 and 1952)							
Q U A N T I T Y				V A L U E			
March		January-March		March		January-March	
1953	1952	1953	1952	1953	1952	1953	1952
Lbs.	Lbs.	Lbs.	Lbs.	\$	\$	\$	\$
1,329,751	2,376,662	4,370,957	6,867,389	764,181	1,103,526	2,470,426	3,229,644

Prices paid for fresh and frozen fishery products by the Army Quartermaster Corps in March 1953 averaged 57.5 cents per pound as compared with 46.4 cents in March 1952. The average price paid for the first three months of 1952 was 56.5 cents per pound, considerably higher than the average of 47.0 cents for the similar period a year earlier.

In addition to the purchases of fresh and frozen fishery products indicated above, the Armed Forces generally make some local purchases which are not included in the above figures. Therefore, actual purchases are somewhat higher than indicated, but it is not possible to obtain data on the local purchases made by military installations throughout the country.

* * * * *

Value of Fresh and Frozen Fishery Products Purchases by U. S. Department of Defense, 1952		Value	
Market Center (Purchasing Office)			
New York, N. Y.	5,000,000	\$	
Richmond, Va.	1,700,000		
Columbia, S. C.	750,000		
New Orleans, La.	2,700,000		
Chicago, Ill.	100,000		
Denver, Colo.	200,000		
Fort Worth, Tex.	250,000		
Seattle, Wash.	2,850,000		
San Francisco, Calif.	1,100,000		
Los Angeles, Calif.	350,000		
Total	15,000,000		

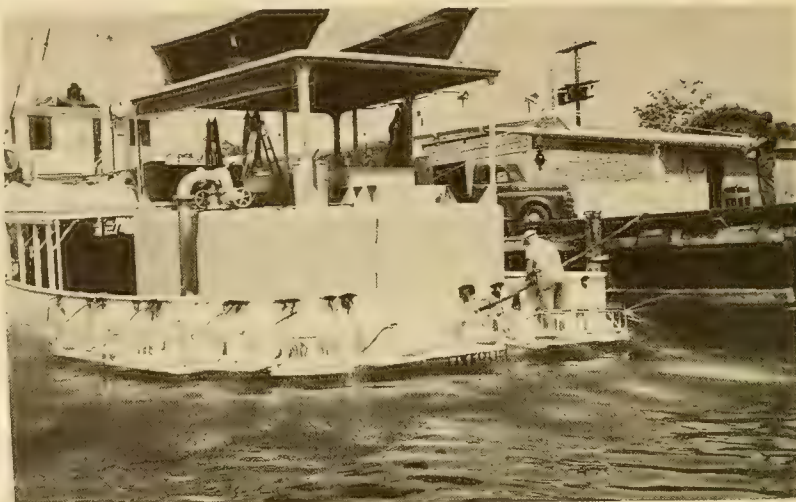
FRESH AND FROZEN FISH PURCHASES BY DEPARTMENT OF THE ARMY, 1952: For the military feeding of the U. S. Army, Navy, Marine Corps, and Air Force, the Department of Defense in 1952 purchased over 32,000,000 pounds of fresh and frozen fishery products in the United States, according to the Quartermaster Corps. A total of about \$15,000,000 was spent for United States-produced fishery products (see table). The New York City Market Center office (including New England) was the largest purchaser in 1952, accounting for one-third of the total value purchased. Other large buying centers were Seattle, Wash., 19 percent; New Orleans, La., 18 percent; and Richmond, Va., 11 percent.



Gulf Exploratory Fishery Program

BAIT FISHING FOR TUNA TO BE TRIED BY "OREGON" (CRUISE NO. 19): Live-bait fishing for tuna and the capture and trial use of live bait taken off the United States Gulf coast are the chief objectives of the Service's exploratory fishing vessel Oregon. The cruise commenced at Pascagoula, Mississippi, on April 9. Operations will be centered in the approaches to the Gulf of Mexico, the Straits of Florida, the Yucatan Channel, and the north-eastern Caribbean Sea. Emphasis will be placed on live-bait fishing for blackfin and yellowfin tuna and white skipjack (Katsuwonus).

The Oregon has been readied to fish for tuna with live bait in the conventional style used successfully by the U. S. fishery off the Pacific coast. However, some additional kinds of equipment are being carried for trial use under conditions in the Gulf of Mexico and the Caribbean Sea. The gear has been prepared so that changes



STERN VIEW OF THE OREGON SHOWS TUNA FISHING RACKS. NOTE THAT THE SPRAY SYSTEM IS BEING TESTED.

in methods of bait fishing can be made without returning to port.



FITTED OUT FOR TUNA BAIT FISHING, THE SERVICE'S EXPLORATORY FISHING VESSEL OREGON GETS READY TO SAIL.

In addition, exploratory drags with a 40-foot shrimp trawl will be made in areas hitherto not covered by the Oregon. Red snapper fishing with wire lines will be undertaken in deep water if and where indications of potential snapper fishing are found.

An "electronic fish finder," the Fischlupe, has been installed and will be tested during this cruise.

The Oregon is scheduled to return to Pascagoula on June 25.



Metal Cans--Shipments for Fishery Products, February 1953



Total shipments of metal cans for fish and sea food in January-February 1953 amounted to 7,910 short tons of steel--9 percent less than the 8,675 short tons shipped in the first two months of 1952. This is based on an April 23 report issued by the Bureau of the Census.

NOTE: STATISTICS COVER ALL COMMERCIAL AND CAPTIVE PLANTS KNOWN TO BE PRODUCING METAL CANS. REPORTED IN BASE BOXES OF STEEL CONSUMED IN THE MANUFACTURE OF CANS, THE DATA FOR FISHERY PRODUCTS ARE CONVERTED TO TONS OF STEEL BY USING THE FACTOR: 23.0 BASE BOXES OF STEEL EQUAL ONE SHORT TON OF STEEL.



North Atlantic Fishery Investigations

"ALBATROSS III" FISHES FOR YOUNG OCEAN PERCH (Cruise No. 47B): Bad weather hampered operations and cut short the cruise of the Branch of Fishery Biology's research vessel Albatross III to the northeast peak of Georges Bank and the area south of Jeffrey's Ledge. The six-day cruise was completed at Woods Hole, Mass., on April 21. The objectives of the cruise were to determine the characteristics of a fish school, to obtain a sample of young ocean perch, and to obtain live haddock for experiments at station.

Fourteen tows were made on the Northeast Peak of Georges Bank; no concentration of haddock suitable for more detailed operations was discovered. The haddock were very uniformly distributed along the entire section covered by these tows. Northwestern winds and heavy seas on the evening of April 17 made it necessary to cease fishing operations. Because of unfavorable weather reports for April 18, the vessel proceeded to the ocean perch area.

Eleven tows were made in the area south of Jeffrey's Ledge and a total of 200 young ocean perch were caught. Operations then ceased because of bad weather.

Bottom photographs were obtained by Woods Hole Oceanographic Institution personnel with the stereocamera in the Northeast Peak area and during the fishing operations for young ocean perch. A series of night photographs of the bottom were obtained in the area south of Jeffrey's Ledge. The number of bottom samples obtained was limited both because of failure of the equipment to operate satisfactorily and because of the type of bottom encountered.



North Pacific Exploratory Fishery Program

"JOHN N. COBB" MAKES GOOD SHRIMP CATCHES IN ALASKAN WATERS (Cruise No. 15): Good shrimp catches were made in southeastern Alaska waters by the Service's Exploratory fishing vessel John N. Cobb on a 7-week cruise completed at Seattle, Washington, on April 17. This trip was the fifth in a series of explorations to locate commercial concentrations of shrimp and other shellfish in southeastern Alaskan waters.

Fishing operations were carried out in Yakutat Bay and the adjacent ocean waters near the Cape Phipps Peninsula. A total of 79 drags were made--the majority with a 20-foot beam trawl, although a small West Coast box-type otter trawl and a New Bedford-type scallop dredge were used in some instances. Shrimp traps were also fished.

Good catches of pink shrimp were made with the beam trawl from off Blizhni Point to off Kame Stream. Nine drags in this area averaged 242 pounds of pink shrimp per 30-minute drag, with the best drag yielding 510 pounds of 80-count (80 whole shrimp per pound) pink shrimp. Six 30-minute drags northwest of Knight Island produced from 102 to 145 pounds of mixed pink and side-stripe shrimp per drag. Drags off Krutoi Island yielded up to 300 pounds of 67-count pink shrimp per 30-minute drag.

Shrimp traps set from the vicinity of Gregson Island to north of Knight Island were generally productive. One set of 38 traps was set for 47 hours off the north tip of Knight Island to the vicinity of Eleanor Cove. The set averaged slightly under $1\frac{1}{2}$ pounds of 13-count spot shrimp and $1\frac{1}{4}$ pounds of 41-count coon-stripe shrimp.

Otter-trawl tows off the Cape Phipps Peninsula resulted in negligible catches of shrimp and fish. Drags with the scallop dredge in Yakutat Bay caught only a few scallops.



Norwegian Sardines Promoted in Major U. S. Markets

The second phase of an intensive three-year advertising and promotion campaign for Norwegian canned sardines has been launched in the United States by the Norwegian Canners Association. This association, with headquarters in Stavanger, represents 106 Norwegian canning companies, an April 9 news release from the Norwegian Information Service points out.

Using newspapers, radio, and television, as well as point-of-sales promotion, the Association is vigorously publicizing Norwegian sardines in six major United States markets--Boston, New York-Newark, Chicago, Minneapolis-St. Paul, Los Angeles-Long Beach, and San Francisco-Oakland. A total of 53 daily and weekly newspapers in these market areas are running weekly advertisements.

During Lent the Association backed up its newspaper ads with either radio or television spot announcements. Scheduled to be used in the summer months, these announcements will stress sardines as easy-to-prepare, heat-beating snacks. Moreover, sardines from Norway are being publicized on radio and television cooking shows, as well in grocery, restaurant, and hotel trade publications. Special features of the public relations program are Norwegian sardine recipes and pictures for editorial use, and the color film "Silver Harvest." This film on the Norwegian sardine industry is available free of charge to television stations, clubs, and associations.

As part of the current drive, tie-ins between Norwegian sardines and four leading cracker companies have been arranged in the New York, Chicago, Boston, and Los Angeles areas. Scheduled to continue through April, the tie-ins include mutual co-operation in newspaper advertising and sales promotion, and in arranging point-of-sales displays. Further tie-ins are being planned for the late spring and summer months.

To stimulate interest in Norwegian sardines among food brokers and store operators, the Association is distributing a 14-page sales portfolio, pointing out that one out of every four families in the U. S. buys Norwegian sardines. The portfolio also tells in pictures and words about the canning process and the standards set by the Association's Quality Control Institute. Other promotional material made available to grocers includes point-of-sales aids, such as shelf-talkers and dump display cards.

In the past 50 years the Norwegian food-canning industry has made tremendous progress. There are at present about 300 canneries scattered along the Norwegian coast, the point of greatest concentration being in the Stavanger district. Since World War II, Norway has exported an annual average of 3,000 to 3,500 metric tons of canned sardines, as well as kippers, crab meat, and shrimp.



Pacific Oceanic Fishery Investigations

"HUGH M. SMITH" STUDIES OCEANOGRAPHY AS RELATED TO SKIPJACK TUNA IN HAWAIIAN WATERS (Cruise No. 20): Detailed data on ocean currents and abundance of nutrient chemicals and marine life were collected by the Service's Pacific Oceanic Fishery Investigations research vessel Hugh M. Smith on a cruise completed at Honolulu on April 4. The cruise, which began February 25, completed the first part of a program of intensive oceanographic studies in Hawaiian waters.

Hydrographic and biological data were obtained at 56 stations around the Hawaiian Islands. Two exploratory sections to 29° N. along the 155° and 158° W. meridians did not reveal any concentrations of marine life. Several oceanic "fronts" were encountered near the northern ends of the lines. The studies were planned to coincide with the season of scarcity of the skipjack tuna or "aku," the most important species in the Hawaiian tuna fishery. A similar investigation will be carried out during the peak of the skipjack season this coming summer; it is hoped that a comparison of the data from these two cruises may shed light on the environmental factors which regulate the seasonal movements of these schools in and out of Hawaiian waters. This could result in an increase in the skipjack catch through the extension of fishing operations into new areas during the local offseason.

In the interim between these two major cruises, a close check will be kept on local hydrographic conditions and on the abundance and whereabouts of the skipjack schools. This work will be accomplished by frequent, short cruises of the smaller research vessel, Charles H. Gilbert, supplemented by aerial scouting in cooperation with the U. S. Navy.



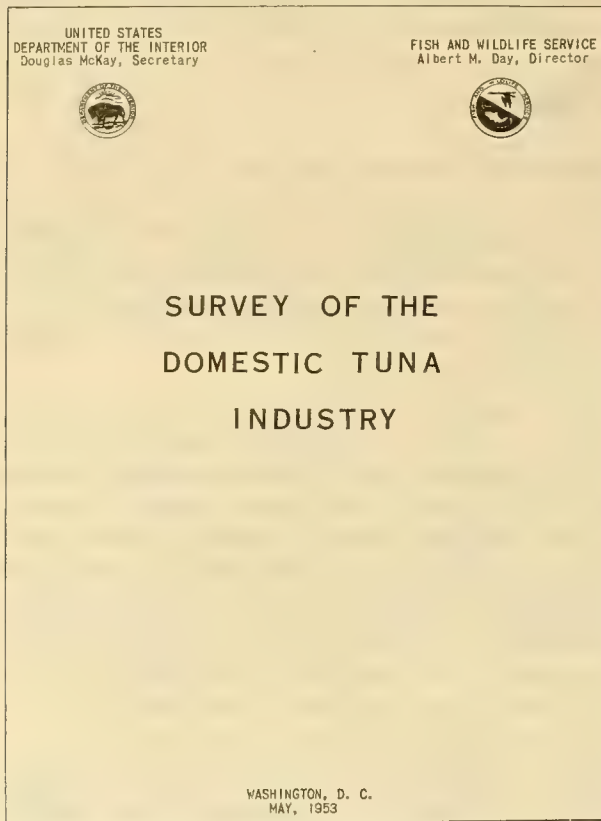
Service Completes Study of Domestic Tuna Industry

A comprehensive study of the domestic tuna industry and its current production and marketing problems has been completed by the Fish and Wildlife Service, the Secretary of the Interior announced in May.

This study was launched in October 1952 in response to a petition to the Secretary of the Interior by six senators from the tuna-producing states of California, Washington, and Oregon. The senators had expressed concern over increased foreign competition and the industry's general economic health.

The results of the study just completed by specialists in the Fish and Wildlife Service's Branch of Commercial Fisheries have been compiled in a report of more than 400 pages. Copies have been submitted to the legislators who sought the investigation. Subjects covered include: history of the industry; consumption; world production; domestic production; processing; relationship of the industry to the national interest; distribution; government assistance in the United States and competing countries; and recommendations for action by both the tuna industry and the Federal Government.

The report notes that the outlook for consumption of products of the tuna industry is bright. On the other hand, the prospects of major relative cost reductions in fishing and processing are rather bleak. Distribution, which is responsible for only a small part of the



ultimate cost of canned tuna, does not offer any great prospect of cost savings as an aid in improving the position of the industry. In the light of these and associated determinations, the report contains suggestions as to what may be done by the domestic tuna industry--the fishermen, processors, distributors, and importers--and the Federal Government, to promote necessary adjustments so that the industry may achieve and maintain a sound position in the domestic economy.

A crisis in the domestic tuna industry arose in 1951 when duty-free imports of frozen tuna from Japan and Latin America, together with increased imports of brine-packed canned tuna from Japan, reached unprecedented proportions. United States tuna fishermen and cannery operators, particularly on the West Coast, found domestic markets oversupplied with tuna and were forced to tie up their vessels and close processing plants.

As the crisis developed, a bill calling for a 3-cent-per-pound duty on fresh or frozen tuna imports was considered by the Congress. This bill, which also directed the Tariff Commission and the Fish and Wildlife Service to initiate investigations of the tuna fishing industry, passed the House but failed of passage in the Senate.

Subsequently, the Senate Finance Committee directed the Tariff Commission to investigate the tuna situation, particularly from the standpoint of foreign competition in order to assist Congress in any future legislation concerning tuna. The Fish and Wildlife Service report supplements, but does not duplicate, the Tariff Commission investigation report published in March.



U. S. Production of Packaged Fish, 1952

The production of fresh and frozen packaged fish (fillets, steaks, and split "butterfly") in the United States during 1952 totaled 190,374,040 pounds, valued at \$54,912,172 to the processors. This is a decrease of 7 percent in quantity and 8 percent in value as compared with the 1951 production.

In 1952 ocean perch fillets (58,660,499 pounds) was once again the largest single item of fresh and frozen packaged fish produced. Haddock fillets (52,064,681

pounds) and flounder fillets (24,153,798 pounds) were second and third in importance. Production was down from 1951 for ocean perch fillets (22 percent) and flounder fillets (8 percent). Haddock fillet production was up 2 percent.

Table 1 - U. S. Fresh and Frozen Packaged Fish Production, 1951-52
(Quantity and Value to the Processors)

Species	1 9 5 2			1 9 5 1		
	Quantity	Total Value	Avg. Price Per Pound	Quantity	Total Value	Avg. Price Per Pound
	Lbs.	\$	\$	Lbs.	\$	\$
Blue Pike	1,954,114	1,021,750	.52	1,467,037	890,186	.61
Carp	-	-	-	125,000	18,750	.15
Catfish	-	-	-	31,895	12,508	.39
Cod	11,663,782	3,000,576	.26	13,289,890	3,435,864	.26
Cusk	668,994	176,627	.26	595,048	140,426	.24
Flounders	24,153,798	9,840,669	.41	26,309,197	10,817,408	.41
Groupers	336,878	155,746	.46	449,107	191,558	.43
Haddock	52,064,681	15,386,569	.30	50,830,527	14,545,679	.29
Hake	1,782,937	325,558	.18	1,951,218	351,725	.18
Halibut	4,230,874	1,883,954	.45	4,259,864	1,857,324	.44
Herring, lake	834,136	263,154	.32	256,483	50,376	.20
Lake trout	324,205	170,630	.53	215,504	120,217	.56
Lingcod	970,213	261,626	.27	1,207,128	323,707	.27
Mackerel	1,415,424	368,908	.26	815,504	212,718	.26
Ocean perch	58,660,499	14,181,952	.24	75,023,366	18,732,729	.25
Pike or pickerel	44,942	10,119	.23	48,000	16,115	.33
Pollock	7,800,886	1,195,193	.15	7,096,113	1,257,464	.18
Rockfishes	7,833,294	1,780,094	.23	5,542,174	1,322,409	.24
Sablefish	-	-	-	86,615	19,315	.22
Salmon	3,250,562	1,596,651	.49	2,061,292	1,099,982	.53
Sauger	1,162,319	571,089	.49	1,772,382	1,017,840	.57
Scup	-	-	-	39,000	6,800	.17
Sea bass	-	-	-	206,388	51,614	.25
Sea trout	-	-	-	54,651	14,080	.26
Sheepshead	-	-	-	55,259	11,156	.20
Snapper, red	74,500	49,585	.67	49,686	29,993	.60
Spanish mackerel	200,303	71,096	.35	215,231	74,018	.34
Sucker (mullet)	-	-	-	27,188	4,801	.18
White bass	26,600	11,205	.42	18,610	8,044	.43
Whitefish	379,453	215,501	.57	365,921	205,370	.56
Whiting (silver hake)	7,911,613	1,057,794	.13	8,713,782	1,337,767	.15
Wolffish	694,857	222,744	.32	337,439	101,886	.30
Yellow perch	752,707	426,007	.57	579,864	369,057	.64
Yellow pike	966,241	593,804	.61	1,183,087	777,526	.66
Miscellaneous	1/215,228	73,571	.34	2/206,618	60,686	.29
Total	190,374,040	54,912,172	.29	205,486,068	59,487,098	.29

1/INCLUDES BLUEFISH, CARP, OCEAN POUT, SABLEFISH, SEA BASS, GRAY SEA TROUT, SHAD, SUCKERS, STRIPED BASS, AND UNCLASSIFIED SPECIES.

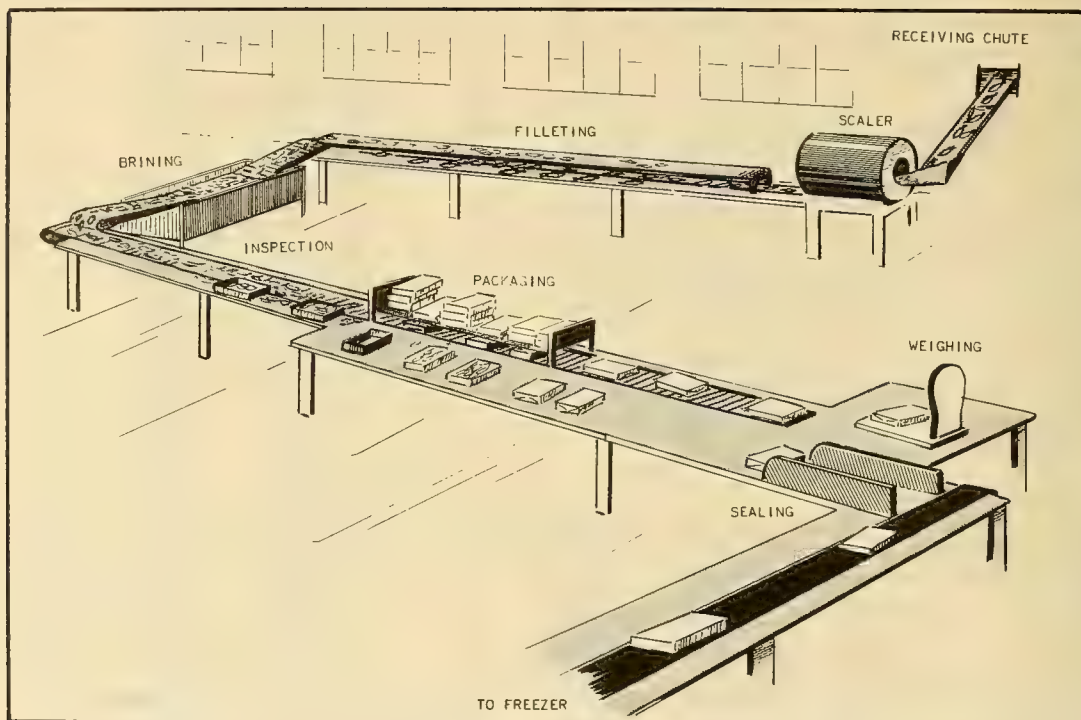
2/INCLUDES AMBERJACK, BLUEFISH, BUFFALOFISH, BUTTERFISH, CABIO, DRUM, KING MACKEREL, OCEAN POUT, SCUP, SHAD, STRIPED BASS, SWORDFISH, TILEFISH, WHITE PERCH, AND UNCLASSIFIED SPECIES.

The average price received by the processors for all fresh and frozen packaged fish in 1952 was 29 cents per pound, the same as in 1951. Among the leading items, average prices for ocean perch fillets increased from 24 cents per pound in 1951 to 25 cents in 1952; haddock fillets dropped from 30 cents to 29 cents; while flounder fillets remained steady at 41 cents and cod fillets and steaks at 26 cents.

The merchandising of frozen fishery products in consumer-size packages (2 pounds or less per pkg.) has made rapid strides in the United States since 1950.

Table 2 - U. S. Production of Certain Consumer-Packaged Frozen Fishery Products, 1950-52			
Item	1952 Pounds	1951 Pounds	1950 Pounds
Fillets	46,685,000	40,423,000	26,930,000
Shrimp:			
Breaded	16,978,000	17,718,000	11,060,000
Not breaded ..	7,181,000		
Scallops	3,692,000	2,546,000	3,800,000
Oysters	2,900,000	1,063,000	865,000
Total	77,436,000	61,750,000	42,665,000

The production of a selected number of items in consumer-size fixed-weight packages in 1952 totaled over 77 million pounds--25 percent over the 1951 pack and 82 percent more than in 1950. Fillets and shrimp are the principal products put up in the consumer-size packages. Included are frozen breaded and cooked products.



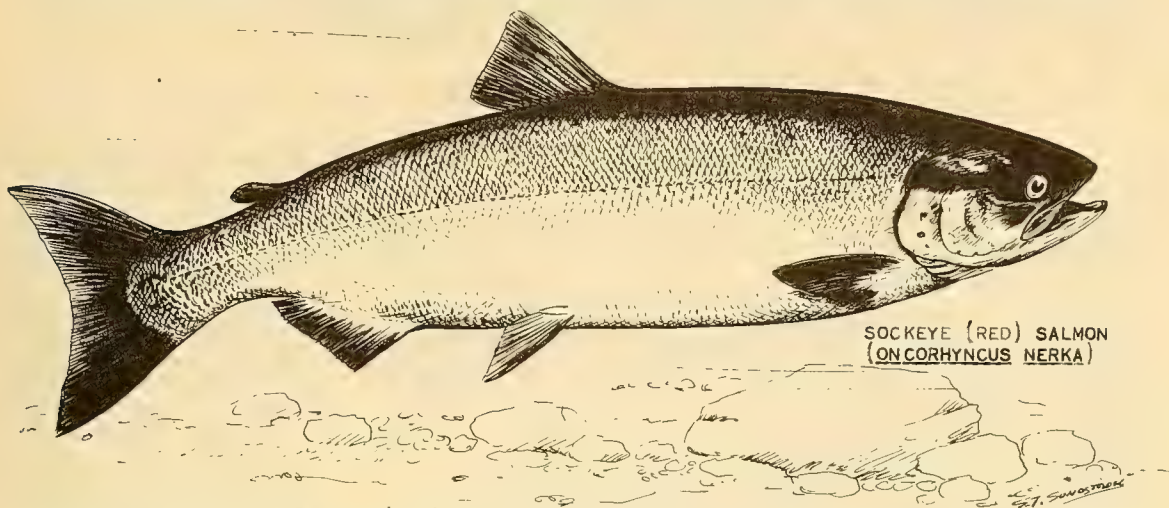
FILLETING PLANT

In addition to fillets, shrimp, scallops, and oysters, there were small quantities of other types of fishery products put up in consumer-size packages, but data on these are not available.



U. S. Canned Pack of Selected Fishery Products, 1952

SALMON CANNED IN PACIFIC COAST STATES: The 1952 pack of canned salmon in the Pacific Coast States of California, Oregon, and Washington amounted to 890,156 stand-



SOCKEYE (RED) SALMON
(ONCORHYNCHUS NERKA)

ard cases, valued at \$21,906,773 to the canners (table 1). The Puget Sound district of Washington canned 78 percent of the pack, the Columbia River districts of Oregon and Washington 19 percent, and the coastal districts of the three states the remaining 3 percent. Salmon were canned at 28 plants in Washington, 12 in Oregon, and 1 in California.

Table 1 - Pacific Coast States Canned Salmon Pack By Species and Area, 1952^{1/}

Species	Puget Sound			Columbia River			Coastal			Total	
	Quantity	Value to Canners	Avg. Price Per Std. Case	Quantity	Value to Canners	Avg. Price Per Std. Case	Quantity	Value to Canners	Avg. Price Per Std. Case	Quantity	Value to Canners
	Std. Cases ^{2/}	\$	\$	Std. Cases ^{2/}	\$	\$	Std. Cases ^{2/}	\$	\$	Std. Cases ^{2/}	\$
Chinook or king ...	7,887	189,731	24.06	95,353	3,506,181	36.77	1,966	40,432	20.54	105,206	3,736,344
Chum or keta	297,494	4,839,265	16.27	13,759	214,837	15.61	14,998	226,428	15.23	326,251	5,282,527
Pink	4,711	93,594	19.87	-	-	-	-	-	-	4,711	93,594
Red or sockeye	214,540	6,962,097	32.45	9,824	413,774	42.12	796	33,846	42.52	225,160	7,409,717
Silver or coho	173,238	3,743,476	21.61	29,701	875,380	29.47	6,908	152,748	22.11	209,847	4,771,604
Steelhead	-	-	-	18,979	612,987	32.30	-	-	-	18,979	612,987
Total	697,870	15,828,163	22.68	167,616	5,623,159	33.55	24,670	455,451	18.46	890,156	21,906,773

^{1/}PRELIMINARY. DOES NOT INCLUDE ALASKA SALMON PACK.

^{2/}STANDARD CASES REPRESENT CASES OF VARIOUS SIZES CONVERTED TO THE EQUIVALENT OF 48 1-POUND CANS, EACH CAN CONTAINING 16 OUNCES.

The 1952 pack was 23 percent less in quantity and 25 percent lower in value as compared with 1951 (table 2). This was due to 1952 being an off-year for the pink salmon run. All other species of salmon, except chinook or king, increased substantially; the largest increase (72 percent) was for silver or coho.

Table 2 - Pacific Coast States Canned Salmon Pack By Species, 1942-52
(Quantity in Standard Cases^{2/} and Value to the Canners)

Year	Chinook or King	Chum or Keta	Pink	Red or Sockeye	Silver or Coho	Steelhead	Total
	Std. Cases ^{2/}	Std. Cases ^{2/}	Std. Cases ^{2/}	Std. Cases ^{2/}	Std. Cases ^{2/}	Std. Cases ^{2/}	Std. Cases ^{2/}
1952 ^{1/} ..	105,208	326,251	4,711	225,160	209,847	18,979	890,156
1951	157,231	262,037	441,605	163,657	121,832	14,862	1,161,274
1950	151,928	539,982	2,277	136,741	160,625	10,266	1,001,819
1949	157,861	219,652	553,987	107,801	85,143	8,881	1,133,325
1948	285,266	276,158	4,480	97,907	125,647	20,617	810,075
1947	300,029	185,178	628,300	37,095	155,842	22,782	1,329,226
1946	164,898	68,762	160	283,935	25,505	17,029	560,289
1945	139,262	1,214	301,376	53,130	43,580	19,207	557,769
1944	167,070	1,669	490	38,061	17,809	20,489	245,588
1943	134,225	9,387	62,025	21,610	32,383	16,259	275,889
1942	272,151	149,010	789	282,105	33,728	21,249	759,032

^{1/}PRELIMINARY.

^{2/}"STANDARD CASES" REPRESENT CASES OF VARIOUS SIZES CONVERTED TO THE EQUIVALENT OF 48 1-POUND CANS, EACH CAN CONTAINING 16 OUNCES.

The average price of all salmon packed in the Pacific Coast States in 1952 was \$24.61 per standard case to the canners as compared with \$25.31 in 1951. Columbia River canned salmon had the highest average price--\$33.55 per standard case--due to the large percentage of chinook salmon. The 1951 average on the Columbia River was \$35.41 per case. Salmon canned in the Puget Sound area averaged \$22.68 per standard case to the canner in 1952 and coastal salmon averaged \$18.46, compared with \$23.24 and \$20.90, respectively, in 1951.

* * * * *

MAINE SARDINES (INCLUDING SEA HERRING): The pack of Maine sardines (including sea herring) in 1952 amounted to 3,457,581 standard cases, valued at \$21,402,994 to the packers (table 1). This was an increase of 106 percent in quantity and 46 percent in value as compared with the 1951 pack of 1,676,764 standard cases. Sardines were canned in 47 plants in Maine and 3 in Massachusetts.

Style of Pack	Quantity	Value to Canners	Avg. Price Per Std. Case ^{2/}	Can and Case Size	Quantity	Value to Canners	Avg. Price Per Case
	Std. Cases ^{2/}	\$	\$	Net Contents Per Can	No. of Cans Per Case	Actual Cases	\$
Natural, without sauce or oil	198,587	543,598	2.73	3½ ounces	100	2,998,207	19,762,806
In soybean or other vegetable oil	2,780,824	17,968,307	6.46	5 "	100	46,920	312,636
In mustard sauce	291,239	1,812,327	6.22	9 "	48	62,585	412,488
In tomato sauce	118,912	471,252	3.96	10 "	48	19,695	124,646
In olive oil	15,242	128,404	8.42	15 "	48	116,125	724,325
Other ^{3/}	52,777	479,106	9.09	Other sizes (converted to 3½ ounces) ..	100	17,355	66,093
Total	3,457,581	21,402,994	6.19	Total		3,261,087	21,402,994

^{1/}PRELIMINARY.

^{2/}CASES OF VARIOUS SIZES CONVERTED TO 100 ¼-OIL CANS (3½ OUNCES NET) TO THE CASE.

^{3/}INCLUDES SPECIAL PACKS IN COTTONSEED OIL, PEANUT OIL, AND KIPPED.

The bulk (80 percent) of the 1952 pack was canned in soybean or other vegetable oil. The pack in 3½-ounce cans comprised 92 percent of the total.

The canners' average price for Maine sardines in 1952 was \$6.19 per standard case, 29 percent lower than the \$8.73 average price in 1951, and 34 percent less than the record price of \$9.39 in 1947. However, the demand for canned Maine sardines in 1952 was good.

Year	Quantity	Value to Canners	Avg. Price Per Std. Case ^{2/}	Year	Quantity	Value to Canners	Avg. Price Per Std. Case ^{2/}
	Std. Cases ^{2/}	\$	\$		Std. Cases ^{2/}	\$	\$
1952 ^{1/} ..	3,457,581	21,402,994	6.19	1947 ..	3,013,910	28,310,674	9.39
1951 ...	1,676,764	14,635,352	8.73	1946 ..	3,276,338	20,275,590	6.19
1950 ...	3,844,164	21,209,033	5.52	1945 ..	2,725,216	12,077,201	4.43
1949 ...	3,074,523	21,051,675	6.85	1944 ..	3,261,984	14,819,803	4.54
1948 ...	3,682,392	29,359,114	7.97	1943 ..	2,505,114	11,104,570	4.43

^{1/}PRELIMINARY.

^{2/}CASES OF VARIOUS SIZES CONVERTED TO 100 ¼-OIL CANS (3½ OUNCES NET) TO THE CASE.

NOTE: THE PACK OF HERRING HAS BEEN CONVERTED TO THE EQUIVALENT OF 100 ¼-OIL CANS (3½ OUNCES NET) TO THE CASE AND INCLUDED WITH THE PACK OF SARDINES.

With the exception of 1951, there has not been any great year-to-year fluctuation in the total pack of Maine sardines in the past ten years (table 2).

* * * * *

FISH ROE AND CAVIAR: The United States pack of canned fish roe and caviar in 1952 amounted to 64,080 standard cases (48 1-pound cans), valued at \$1,681,010 to the packers (table 1). Alewife roe accounted for 54 percent of the quantity and 24 percent of the value of the pack; while salmon and sturgeon caviar combined comprised 9 percent of the quantity and 42 percent of the value.

The total 1952 pack of canned fish roe and caviar was a decrease of 16 percent in quantity and 13 percent in value as compared with 1951 (table 2).

The average price for all roe and caviar canned in 1952 was \$26.23 per standard case to the packer as compared with \$25.31 per case in 1951. The average prices

Table 1 - U. S. Pack of Canned Fish Roe and Caviar, 1952 ^{1/}					
Product	Plants Packing	Quantity	Value to Cannerns	Avg. Price Per Std. Case ^{2/}	States of Production and Number of Plants
	No.	Std. ^{2/} Cases	\$	\$	
Roe:					
Alewife	25	34,691	411,839	11.86	Md. 4, Va. 12, N. C. 9
Shad	9	3,444	167,680	48.69	Md. 1, Wash. 2, Ore. 4, Calif. 2
Deep sea	2	{ 7,083	{ 104,458	{ 14.75	Mass. 3, Conn. 1
Mackerel	1				
Herring	1				
Caviar:					
Salmon	3	{ 4,595	{ 527,510	{ 114.80	N. Y. 3
Sturgeon	2				
Whitefish	3	1,038	56,737	54.66	N. Y. 2, Wisc. 1
Total Edible Roe and Caviar		50,851	1,268,224	24.94	
Salmon eggs for bait ..	9	13,229	412,786	31.20	Wash. 9
Grand Total	3/51	64,080	1,681,010	26.23	

1/ PRELIMINARY.

2/ CASES OF VARIOUS SIZES CONVERTED TO THE EQUIVALENT OF 48 CANS, EACH CAN WITH A NET WEIGHT OF 16 OUNCES.

3/ EXCLUSIVE OF DUPLICATION.

for the different products varied considerably in 1952--from a low of \$11.86 per standard case for alewife roe to \$114.80 per case for salmon and sturgeon caviar.

Table 2 - U. S. Pack of Canned Fish Roe and Caviar, 1942-52							
Year	Quantity	Value to Cannerns	Avg. Price Per Std. Case ^{1/}	Year	Quantity	Value to Cannerns	Avg. Price Per Std. Case ^{1/}
	Std. Cases ^{1/}	\$	\$		Std. Cases ^{1/}	\$	\$
1952 ^{2/} ..	64,080	1,681,010	26.23	1946 ..	58,192	1,905,638	32.75
1951 ...	76,095	1,926,140	25.31	1945 ..	36,795	948,042	25.77
1950 ...	70,382	1,886,959	26.81	1944 ..	55,677	824,197	14.80
1949 ...	86,459	1,969,998	22.79	1943 ..	59,884	1,044,582	17.44
1948 ...	50,629	1,473,320	29.10	1942 ..	53,190	910,890	17.13
1947 ...	52,432	1,641,228	31.30				

1/ CASES OF VARIOUS SIZES CONVERTED TO THE EQUIVALENT OF 48 CANS, EACH CAN WITH A NET WEIGHT OF 16 OUNCES.

2/ PRELIMINARY.

* * * * *

ANIMAL FOOD FROM FISHERY PRODUCTS: The 1952 pack of canned animal food from fishery products amounted to 3,497,653 standard cases, valued at \$15,667,350, or an

Table 1 - U. S. Pack of Canned Animal Food from Fishery Products By States, 1952 ^{1/}			
State	Quantity	Value to Cannerns	Avg. Price Per Std. Case ^{2/}
	Std. Cases ^{2/}	\$	\$
Maine	948,054	3,313,953	3.50
Massachusetts	829,574	3,740,477	4.51
N. Y., N. J., Md., and Va.	135,186	568,968	4.21
Miss., Ill., Ia., and Tenn.	256,326	1,290,913	5.04
California and Washington	1,328,513	6,753,039	5.08
Total	3,497,653	15,667,350	4.48

1/ PRELIMINARY.

2/ CASES OF VARIOUS SIZES CONVERTED TO THE EQUIVALENT OF 48 CANS, EACH CAN CONTAINING 16 OUNCES.

average price of \$4.48 per standard case to the canner (table 1). This is the largest pack in the history of the industry--an increase of 49 percent in quantity and 34 percent in value as compared with the 1951 pack. California and Washington produced 38 percent of the pack, Maine 27 percent, Massachusetts 24 percent, and the other states 11 percent. Animal food was canned in 14 plants in California, 8 in Massachusetts, 3 in Maine, 2 in Washington, and 1 plant each in New York, New Jersey, Maryland, Virginia, Mississippi, Illinois, Iowa, and Tennessee.

Table 2 - U. S. Pack of Canned Animal Food from Fishery Products By Size of Can and Case, 1952 ^{1/}			
Can and Case Size	Quantity	Value to Canners	Avg. Price Per Case
	<u>Actual Cases</u>	<u>\$</u>	<u>\$</u>
6 ounces net (48 cans)	17,813	36,327	2.04
8 " " (" ")	2,342,781	5,893,174	2.52
16 " " (" ")	2,301,045	9,633,337	4.19
Other sizes (converted to standard cases) .	18,538	104,512	5.64
Total	4,680,177	15,667,350	-
^{1/} PRELIMINARY.			

The 1952 pack was about evenly divided between the 8-ounce and the 16-ounce can (table 2). Fifty percent was packed in the 8-ounce can, 49 percent in the 16-ounce can, and the remaining 1 percent in containers of various sizes.

Table 3 - U. S. Pack of Canned Animal Food from Fishery Products, 1942-52			
Year	Quantity	Value to Canners	Avg. Price Per Std. Case ^{2/}
	<u>Std. Cases^{2/}</u>	<u>\$</u>	<u>\$</u>
1952 ^{1/}	3,497,653	15,667,350	4.48
1951	2,341,871	11,575,809	4.99
1950	2,721,393	13,870,870	5.10
1949	1,931,757	8,663,442	4.48
1948	1,323,808	6,971,003	5.27
1947	909,964	3,949,419	4.34
1943	1,771	5,319	3.00
1942	104,954	374,718	3.57
^{1/} PRELIMINARY.			
^{2/} CASES OF VARIOUS SIZES CONVERTED TO THE EQUIVALENT OF 48 CANS, EACH CAN CONTAINING 16 OUNCES.			
NOTE: NO PRODUCTION IN 1944, 1945, AND 1946 BECAUSE CANS WERE NOT ALLOCATED FOR THIS PRODUCT.			

The canning of animal food from fishery products has increased sharply since the end of World War II (table 3). More packers have become aware of the value of animal food produced from fishery products, and the expanding market for this product. During World War II no cans were allocated by the Government for the canning of animal food, which accounts for the fact that none was produced during that period.



U. S. Production of Selected Byproducts

OYSTER AND MARINE-CLAM SHELL PRODUCTS: The production of grit and agricultural lime from oyster-shell products in 1952 totaled 429,348 tons, valued at \$3,359,024 to the manufacturers (table 1). This was a decrease of 5 percent in quantity and 1 percent in value as compared with 1951. No clam shells were used in 1952.

Crushed-shell products were prepared in 24 plants--3 each in New Jersey, Pennsylvania, Virginia, and Washington; 2 each in Maryland, North Carolina, Texas, and California; and 1 plant each in Florida, Alabama, Louisiana, and Oregon.

Table 1 - U. S. Production of Oyster-Shell Products by States, 1952^{1/}

State	Crushed Shells for Poultry Feed			Unburned Shell Lime			T o t a l	
	Quantity	Value	Avg. Price	Quantity	Value	Avg. Price	Quantity	Value
	Short Tons	\$	Per Ton	Short Tons	\$	Per Ton	Short Tons	\$
New Jersey	6,144	58,633	9.54	571	2,508	4.39	6,715	61,141
Pennsylvania and Maryland ...	25,577	356,717	13.95	12,637	64,108	5.07	38,214	420,825
Va., N. C., Fla., and Ala. ...	79,935	859,529	10.75	29,684	124,471	12.85	89,619	984,000
Louisiana and Texas	230,049	1,496,594	6.50	41,517	166,613	4.01	271,566	1,663,207
Wash., Oreg., and Calif.	14,726	168,245	11.43	8,508	61,606	7.24	23,234	229,851
Total	356,431	2,939,718	8.25	72,917	419,306	5.75	429,348	3,359,024

1/PRELIMINARY.

2/INCLUDES SMALL QUANTITY BURNED LIME PRODUCED IN VIRGINIA.

The average price per ton for the crushed shell for poultry feed in 1952 was \$8.25, second only to the record price of \$8.36 in 1951, but the first decline

Table 2 - U. S. Production of Oyster and Marine-Clam Shell Products, 1942-52

Year	Crushed Shells for Poultry Feed			Burned and Unburned Shell Lime			T o t a l	
	Quantity	Total Value	Avg. Price Per Ton	Quantity	Total Value	Avg. Price Per Ton	Quantity	Total Value
	Short Tons	\$	\$	Short Tons	\$	\$	Short Tons	\$
1952 ^{1/} ..	356,431	2,939,718	8.25	72,917	419,306	5.75	429,348	3,359,024
1951 ...	377,791	3,157,129	8.36	75,528	411,616	5.45	453,319	3,568,745
1950 ...	344,300	2,625,896	7.63	55,075	320,557	5.82	399,375	2,946,453
1949 ...	323,662	2,393,794	7.40	38,366	268,458	7.00	362,028	2,662,252
1948 ...	296,570	2,140,705	7.22	48,505	333,787	6.88	345,075	2,474,492
1947 ...	438,629	2,860,175	6.52	62,764	402,983	6.42	501,393	3,263,158
1946 ...	329,717	1,913,584	5.80	60,716	357,269	5.88	390,433	2,270,853
1945 ...	369,064	2,001,318	5.42	138,032	572,399	4.15	507,096	2,573,717
1944 ...	458,080	2,684,306	5.86	124,135	450,390	3.63	582,215	3,134,696
1943 ...	398,852	2,299,053	5.76	110,433	521,933	4.73	509,285	2,820,986
1942 ...	345,032	2,028,170	5.88	121,005	554,091	4.58	466,037	2,582,261

1/PRELIMINARY. - THE ENTIRE PRODUCTION WAS FROM OYSTER SHELLS.

since 1945 (table 2). Prices paid for agricultural lime from marine shells in 1952 averaged \$5.75 per ton, an increase of 5 percent over the 1951 price, but 18 percent below the record price of \$7.00 per ton in 1949.

* * * * *

FRESH-WATER MUSSEL-SHELL PRODUCTS: Fresh water mussel-shell buttons produced in the United States in 1952 amounted to 5,078,402 gross, valued at \$4,430,114 to the manufacturers (table 1). In addition, 2,444 short tons of lime and poultry

Table 1 - U. S. Production of Fresh-Water Mussel-Shell Products, 1952^{1/}

State	B u t t o n s			Lime and Poultry Grit			Total Value To Mfrs.
	Quantity	Value	Avg. Price	Quantity	Value	Avg. Price	
	Gross	\$	Per Gross	Short Tons	\$	Per Ton	\$
Iowa	4,772,578	4,196,927	88	2,444	2/8,431	3.45	4,205,358
N. Y., Pa., Mo., and Ark. ...	305,824	233,187	76	-	-	-	233,187
Total	5,078,402	4,430,114	87	2,444	8,431	3.45	4,438,545

1/PRELIMINARY.

2/SMALL QUANTITIES OF LIME AND DUST PRODUCED IN NEW YORK ARE INCLUDED WITH THE IOWA PRODUCTION.

grit (valued at \$8,431) were produced by mussel-shell manufacturers. Mussel shells purchased during the year amounted to 8,416 short tons, valued at \$393,356 to the fishermen.

Mussel-shell products were manufactured in 11 plants in Iowa; 2 in New York; and 1 plant each in Pennsylvania, Arkansas, and Missouri. Shells were taken in 10

states in the Mississippi River and Great Lakes region. The producing states in the order of their importance were: Tennessee, which contributed 33 percent of

Table 2 - U. S. Production of Fresh-Water Mussel-Shell Products, 1942-52^{1/}

Year	B u t t o n s			Other Products ^{2/} Value To Mfr.	Total Value To Mfr.
	Quantity	Value To Mfr.	Avg.Price Per Gross		
	Gross	\$	¢	\$	\$
1952 ^{1/} ..	5,078,402	4,430,114	87	8,431	4,438,545
1951 ...	4,534,759	3,805,352	84	40,309	3,845,661
1950 ...	4,940,190	4,074,775	82	51,758	4,126,533
1949 ...	4,720,239	3,696,452	78	71,251	3,767,703
1948 ...	6,810,135	5,396,511	79	50,610	5,447,121
1947 ...	8,254,000	8,166,000	99	4/	8,166,000
1946 ...	9,669,580	6,527,758	68	101,820	6,629,578
1945 ...	^{3/} 9,027,685	^{3/} 4,844,647	54	-	^{3/} 4,844,647
1944 ...	8,024,609	4,306,353	54	122,550	4,428,903
1943 ...	8,077,523	3,679,305	46	102,723	3,782,028
1942 ...	11,585,292	4,980,476	43	83,795	5,064,271

^{1/}PRELIMINARY.

^{2/}CRUSHED SHELL LIME, POULTRY GRIT, AND CUT SHELLS.

^{3/}ESTIMATED.

^{4/}DATA NOT AVAILABLE.

the total quantity; Alabama, 28 percent; Arkansas, 22 percent; Kentucky, 6 percent; Indiana and Iowa, 3 percent each; Mississippi, 2 percent; Illinois, 1 percent; and Louisiana and Wisconsin 2 percent.

* * * * *

MARINE PEARL-SHELL BUTTONS: The production of marine pearl-shell buttons in 1952 amounted to 4,486,456 gross, valued at \$6,880,104 to the manufacturers (table 1).

Table 1 - U. S. Production of Marine Pearl-Shell Buttons By States, 1952^{1/}

State	Quantity	Value To Mfr.	Avg.Price Per Gross
	Gross	\$	¢
Connecticut	1,173,423	1,518,957	1.29
New York	1,057,656	1,625,333	1.54
New Jersey	1,059,190	1,718,335	1.62
Pennsylvania and Maryland	1,130,451	1,914,794	1.69
Iowa	65,736	102,685	1.56
Total	4,486,456	6,880,104	1.53

^{1/}PRODUCED PRINCIPALLY FROM IMPORTED SHELLS. PRELIMINARY.

This was a decrease of 4 percent in quantity and 11 percent in value, compared with 1951. Manufacturers received an average of \$1.53 per gross for their 1952 production, compared with

Table 2 - U. S. Production of Marine Pearl-Shell Buttons, 1942-52

Year	Quantity	Value To Mfr.	Avg.Price Per Gross
	Gross	\$	¢
1952 ^{1/} ..	4,486,456	6,880,104	1.53
1951 ...	4,665,285	7,714,846	1.65
1950 ...	5,803,641	9,239,018	1.59
1949 ...	4,089,712	6,782,281	1.66
1948 ...	4,974,073	8,587,011	1.73
1947 ...	5,087,000	7,902,000	1.55
1946 ...	3,461,559	5,635,904	1.63
1945 ...	2,398,020	3,286,245	1.37
1944 ...	2,035,320	2,601,626	1.28
1943 ...	2,949,978	3,792,059	1.29
1942 ...	5,364,718	4,532,695	.84

^{1/}PRELIMINARY.

an average of \$1.65 in 1951 and 84 cents in 1942.



U. S. Shrimp Imports, 1952

United States shrimp (fresh, frozen, canned, and dried) imports from all countries in 1952 totaled 38,470,510 pounds, a decrease of 8 percent from 1951 and 4 percent less than in 1950 (table 1). This decline was due mainly to poor fishing on the Mexican west coast. Mexico as usual was still the largest foreign shipper of fresh and frozen shrimp to the United States. Almost its entire production is exported to the United States.



In 1952 Mexican shipments comprised 88 percent of the total shrimp imports into the United States, compared with 94 percent in 1951, and 99 percent in 1950.

Table 1 - U. S. Shrimp (Fresh, Frozen, Canned, and Dried) Imports, 1950-52			
Country of Origin	1952	1951	1950
	Lbs.	Lbs.	Lbs.
Mexico ^{1/}	33,762,447	39,575,128	39,652,640
Panama ^{1/}	3,439,429	1,218,200	143,006
Canal Zone ^{2/}	463,434	657,350	148,250
Other countries ^{2/}	805,200	373,235	254,167
Total	38,470,510	41,823,913	40,198,063

^{1/}MOSTLY FROZEN, BUT INCLUDES SOME FRESH SHRIMP.

^{2/}MOSTLY CANNED AND DRIED, BUT DOES INCLUDE SOME FROZEN SHRIMP.

Shipments of shrimp (mostly frozen) from Panama have increased substantially in the past few years. From a total of 143,006 pounds in 1950, Panama shipments increased to 3,439,429 pounds in 1952.

Table 2 - U. S. Shrimp ^{1/} Imports from Mexico by Customs Districts, 1950-52			
Customs District	1952	1951	1950
	Lbs.	Lbs.	Lbs.
New York	463,950	1,098,900	691,875
Buffalo	-	-	34,600
Rochester	-	-	30,000
Philadelphia	-	-	93,100
Maryland	74,600	-	30,000
Florida	326,513	308,302	614,332
New Orleans	2,619,142	2,551,561	1,842,291
Galveston	832,550	1,335,035	68,000
Laredo	6,703,181	5,173,346	3,256,939
El Paso	-	2,009	-
Arizona	17,812,840	24,435,880	23,045,869
San Diego	1,667,569	1,708,168	1,639,932
Los Angeles	591,497	285,589	3,096,136
San Francisco	380,000	352,648	372,115
Chicago	2,192,695	2,060,054	4,043,962
Minnesota	-	30,000	129,750
Vermont	-	3,000	-
Duluth	-	-	1,988
Wisconsin	-	-	34,600
Connecticut	-	4,000	-
Colorado	42,050	78,020	197,995
St. Louis	2,360	109,616	429,156
Washington	16,500	39,000	-
Oregon	37,000	-	-
Total	33,762,447	39,575,128	39,652,640

^{1/}MOSTLY FRESH AND FROZEN.

Imports from Mexico by customs districts indicate that the biggest decline occurred in entries through the Arizona Customs District (table 2). Since the bulk of Mexico's west coast production enters the United States through this port of entry, it corroborates the reports that shrimp production in that area has declined considerably.



Wholesale Prices

Wholesale average prices for edible fishery products this March were down from the previous month and March 1952. The drop was attributed to heavy inventories of frozen fish and lower meat prices. Production of fresh fish was about

Table 1 - Wholesale Average Prices and Revised Indexes for Edible Fish and Shellfish, March 1953 and Comparisons												
Group, Subgroup, and Item Specification	Point of Pricing	Unit	Avg. Prices (\$)		Indexes (1947-49 = 100)							
			Mar. 1953	Feb. 1953	Mar. 1953	Feb. 1953	Jan. 1953	Mar. 1952				
ALL FISH AND SHELLFISH (Fresh, Frozen, and Canned).....												
Fresh and Frozen Fishery Products:					102.8	108.0	110.5	109.5				
Drawn, Dressed, or Whole Finfish:					105.7	114.6	119.3	114.4				
Haddock, large, offshore, drawn, fresh					94.8	112.2	117.5	117.2				
Halibut, Western, 20/80 lbs., dressed fresh or frozen					Boston	lb.	.07	.11	73.4	114.3	131.7	108.3
Salmon, king, lge. & med., dressed, fresh or frozen					N.Y.C.	"	.33	.32	102.1	100.1	103.2	108.4
Whitefish, mostly Lake Superior, drawn (dressed), fresh					"	"	.49	.49	109.6	109.0	110.7	118.6
Whitefish, mostly Lake Erie pound or gill net, round, fresh					Chicago	"	.41	.62	100.4	152.4	142.5	161.1
Lake trout, domestic, mostly No. 1, drawn (dressed), fresh					N.Y.C.	"	.37	.65	73.8	131.4	99.1	156.7
Yellow pike, mostly Michigan (Lakes Michigan & Huron), round, fresh					Chicago	"	.63	.63	129.1	128.1	124.0	133.2
Processed, Fresh (Fish and Shellfish):					N.Y.C.	"	.55	.50	129.0	117.2	96.1	155.9
Fillets, haddock, sml., skins on, 20-lb. tins..					Boston	lb.	.30	.32	122.1	120.0	125.2	111.5
Shrimp, lge. (26-30 count), headless, fresh or frozen					N.Y.C.	"	.83	.79	102.1	107.2	131.0	115.7
Oysters, shucked, standards					Norfolk area	gal.	4.75	4.75	130.4	124.9	122.5	110.7
Processed, Frozen (Fish and Shellfish):									117.5	117.5	126.8	111.3
Fillets: Flounder (yellowtail), skinless 10-lb. pkg.					Boston	lb.	.33	.37	112.7	112.3	113.6	109.6
Haddock, sml., skins on, 10-lb. cello-pack					"	"	.21	.21	115.7	129.7	119.2	136.7
Ocean perch, skins on, 10-lb. cello- pack					Gloucester	"	.24	.24	76.2	76.2	92.0	113.4
Shrimp, lge. (26-30 count), 5-lb. pkg.					Chicago	"	.83	.79	114.4	114.4	114.4	113.2
Canned Fishery Products:									127.3	121.9	121.1	96.4
Salmon, pink, No. 1 tall (16 oz.), 48 cans per case									98.5	98.1	97.6	102.2
Tuna, light meat, solid pack, No. ½ tuna (7 oz.), 48 cans per case					Seattle	case	19.71	19.71	104.4	104.4	104.4	109.6
Sardines (pilchards), Calif., tomato pack, No. 1 oval (15 oz.), 48 cans per case					Los Angeles	"	14.80	14.65	92.4	91.5	90.5	89.0
Sardines, Maine, keyless oil, No. ¼ drawn (3½ oz.), 100 cans per case					"	"	9.25	9.25	108.0	108.0	106.8	109.4
					N.Y.C.	"	7.70	7.70	81.9	81.9	79.3	105.9
1/ REPRESENT AVERAGE PRICES FOR ONE DAY (MONDAY OR TUESDAY) DURING THE WEEK IN WHICH THE 15TH OF THE MONTH OCCURS.												

1/REPRESENT AVERAGE PRICES FOR ONE DAY (MONDAY OR TUESDAY) DURING THE WEEK IN WHICH THE 15TH OF THE MONTH OCCURS.

normal for this time of year. The over-all edible fish and shellfish (fresh, frozen, and canned) wholesale index for March was 102.8 percent of the 1947-49 average (table 1)--4.8 percent lower than in February and 6.1 percent below March 1952, the Bureau of Labor Statistics of the Department of Labor reports.

The March index for the drawn, dressed, or whole finfish subgroup was down 5.6 percent from February, but there were mixed trends for the individual items.

In spite of lighter-than-average landings, large drawn offshore haddock at Boston dropped 35.8 percent. Whitefish at New York and Chicago dropped considerably from a month earlier--43.8 percent at New York and 34.1 percent at Chicago. All other items were priced higher than in February. Compared with March 1952, all items in this subgroup sold at considerably lower prices this March.

Fresh processed fish and shellfish prices rose 1.8 percent above February and 9.5 percent over March 1952 due entirely to higher shrimp prices. Shrimp landings continued light and the market was strong. Fresh haddock fillet prices at Boston declined while shucked oysters at Norfolk remained unchanged. Compared with March 1952, fresh shrimp and oyster prices were up and haddock prices were down.

BOARD ON WHICH TRIP HAILS OF SMALL DRAGGERS AND LINE TRAWLERS ARE POSTED AT NEW ENGLAND FISH EXCHANGE, BOSTON FISH PIER, PRIOR TO THE CALL FOR BIDS.

From February to March frozen fish and shellfish prices continued to decline, but inventories were being reduced. This decline was more than offset by a

further increase in frozen shrimp prices. Frozen fillets of haddock and ocean perch were priced the same as in February, but flounder fillets dropped 11.8 percent. Compared with a year earlier, the processed frozen fish and shellfish subgroup index was 2.8 percent higher--shrimp was up 32.1 percent, but haddock fillets and flounder fillets were down 32.2 and 15.4 percent respectively.

Canned fishery products prices in March were 0.4 percent higher than in February, but 3.6 percent lower than March 1952. The only change from February was a 1.0-percent increase in canned tuna prices. Inventories of canned tuna were lower and the market stronger. Also, canned tuna was the only canned fish item priced higher than in March 1952--all other canned fish were priced lower.



SEAWEED RESOURCES OF CANADA

DO YOU KNOW THAT:

Enough valuable products can be extracted from Canadian seaweed to pay off Canada's national debt, according to Dr. A. E. Kerr, President of Dalhousie University, Halifax, Nova Scotia.



International

UNITED NATIONS

FISH FLOUR AS MILK SUBSTITUTE: A quart bottle of fish flour--suggested as a possible substitute for a quart of milk in countries where cows are scarce--was exhibited in New York to the 26-nation Executive Board of the United Nations International Children's Emergency Fund on March 20. The sample was called, by representatives of UNICEF and the Food and Agriculture Organization, a deodorized, tasteless product rich in calcium, containing twice as much protein as skim milk, and costing about the same as milk.

To test the public response to fish flour, FAO hopes to conduct tests in Chile later this year, the Board was informed. As a country with a steady supply of fish, Chile would be especially suitable for trials, FAO believes.

The discussion of milk substitutes arose when a report on "Improvement of Child Nutrition" (Doc. E/ICEF/217), drawn up by a Technical Working Group on Long-Range Activities for Children, was introduced by a member of the UNICEF staff. The Working Group, he said, had decided at a recent meeting in Rome that soybean milk and fish flour were the most promising possibilities for milk substitutes. He then described the nutritional value of the products and mentioned the interest expressed by Indonesia, Guatemala, and Chile.

An FAO representative displayed the bottle of fish flour and said the product could be used in biscuits, soups, or mixed with corn meal. One important advantage, she said, was that fish flour contains vitamin B-12, essential for growth, which does not appear in the vegetable diets common in some countries. FAO, she said, was gathering samples of various types of fish flour and would select the most suitable for acceptability tests in Chile.



Australia

WHALING SEASON SUCCESSFUL IN 1952: The Australian 1952 whaling season was the most successful on record, according to the January 1953 Fisheries Newsletter published by the Commonwealth Director of Fisheries.

Unfortunately, the substantial drop in whale oil prices has had a marked effect on the total value of the production. This has been offset to some extent by improved efficiency in operations with a corresponding increased yield.

During the 1952 season four stations operated at Point Cloates, Carnarvon, and Albany on the west coast, and Moreton Island on the east coast. They processed 1,787 humpback whales for an oil production of 91,360 barrels, equal to 51.1 barrels per whale (see table). Female whales comprised 37.2 percent of the total and their average length was 40.5 feet, the same as in 1951. The average length of males was

slightly less than in 1951, being 39.7 feet and the average length of all whales at 40.1 feet was correspondingly lower.

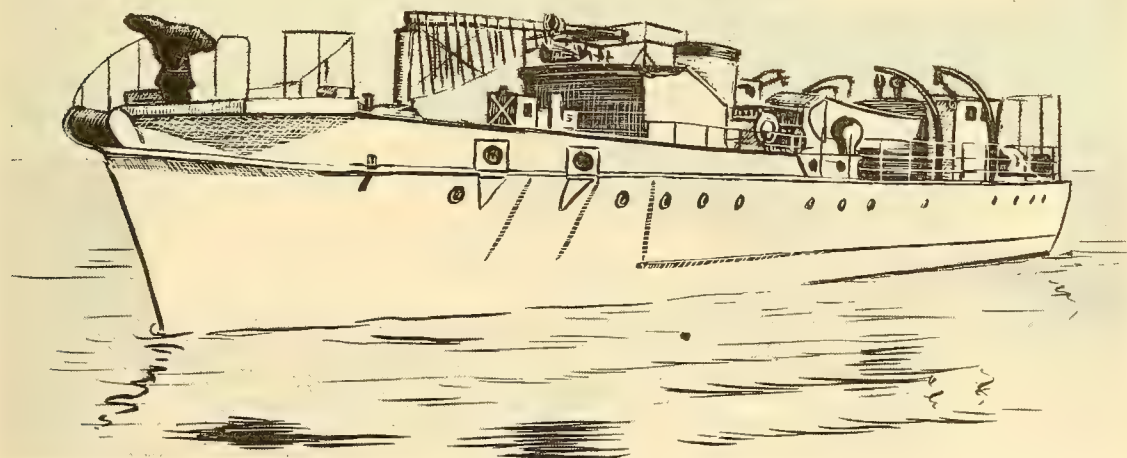
Australian Whaling Operations, 1949-52				
	1952	1951	1950	1949
Number of stations operating	4	2	3 ¹ / ₇	1
Number of whales caught	1,787	1,224	387	190
Number of whales lost	7	4	1	0
Number of whales processed	1,780	1,220	386	190
Percentage of males	62.8	74.5	61.1	70.5
Percentage of females	37.2	25.5	38.9	29.5
Number of foetuses	65	18	25	4
Percentage of females carrying foetus	9.9	5.8	16.6	7.1
Average length {	males (feet)	39.7	40.2	39.8
	females (feet)	40.5	40.5	41.3
	animals (feet)	40.1	40.3	40.4
Oil production (barrels)	91,360	56,051	16,494	5,700
Oil yield per whale (barrels)	51.1	45.9	42.8	30.0

1/INCLUDES STATIONS OPERATED ONLY PART TIME.

The increase in oil yield per whale from 1949 to 1952 clearly indicates the improvements being made in processing the whales.

It will be noted that in 1952 there was a considerable increase in the percentage of female whales as compared with 1951. However, the percentage is less than in 1950, and the percentage of females carrying a foetus is also less than in 1950, but higher than 1951.

No exceptionally large whales were taken and no whale markets were found. There was a large number of sharks present off Point Cloates. The sharks were so



AN AUSTRALIAN WHALE CHASER. NOTE FOLDED MAST TO GET UNDER LOW BRIDGES AND ON FOREDECK THE TRACTOR WHICH SERVES AS A WINCH FOR PULPING WHALES.

bad that it was not possible to flag a whale outside the reef. Attempts to do so resulted in more than half the whale being eaten with a corresponding loss in oil production. A total of 80 sharks were shot while attacking a single whale alongside a catcher.



Canada

UNITED KINGDOM TO BUY BRITISH COLUMBIA CANNED SALMON: Great Britain has agreed to purchase C\$4,250,000 worth of British Columbia canned salmon, the Canadian Minister of Fisheries announced the latter part of March. Reports indicate the purchase will consist of about 200,000 cases of salmon.

Failure of Great Britain to purchase usual quantities of Canadian canned salmon in 1952 was mainly responsible for a large carry-over of 500,000 cases from the 1952 pack, reports a March 25 U. S. Embassy dispatch from Ottawa.

While it is reported that no conditions were attached to this purchase, it is hoped that the Canadian salmon industry would be able to increase its purchases of tin plate and fish nets from the United Kingdom. Particularly as tin plate is no longer in such short supply. The Canadian Minister of Fisheries endorsed this recommendation with the remark "that it was only by expanding her trade with this country that Britain could increase her purchases here," reports a March 30 U. S. Embassy dispatch from London.

* * * * *

SEAL HUNTING PLANS FOR 1953: The Canadian Department of Fisheries states that about 18 vessels, Canadian and foreign, will go out after seals this spring, reports a February 27 dispatch from the U. S. consulate at St. John's, Newfoundland. This is a larger number than anticipated. Of these vessels, nine will operate on the "Front" and the remainder in the Gulf of St. Lawrence. Only five Newfoundland vessels will hunt for seals this year as compared to nine in 1952.



NORWEGIAN SEALING VESSEL

It is reported that of the six sealers from Norway, four would work in the Gulf and the remainder on the "Front." Five or six other vessels from Halifax would work in the Gulf. Newfoundland ships clearing this year were expected to leave St. John's between March 5 and 10. The killing date for the Gulf area has been set as March 5, and March 10 for the "Front." It is reported

that Gulf seals give birth to young one week earlier than the "Front" seals.

Vessels planning to work the Gulf region estimate that about 115,000 animals will have to be taken in order to rate the catch as "good." It is estimated that a herd of about 200,000 seals moves annually in this area where few bedlamers and old seals are to be found. Newly-born seals constitute the main objective. Seal-spotting planes will again be used this year in both waters. The Newfoundland press states that up to the end of February there have been no reports of ice in the Gulf, causing some concern to sealers planning to operate there.

Due to adverse weather conditions in 1952 and the uncertainty of market prices, it was not believed that much effort would be made to hunt seals this spring. However, as all 1952 oil and skins were eventually disposed of, sealers have become more optimistic as it appears a ready market will be available for the 1953 skins. Seal oil is generally the primary reason for a seal hunt and unfortunately market quotations for oil this spring are 25 percent below those of 1952.



Egypt

FISHERMEN'S COOPERATIVES PLANNED: Fishermen's cooperatives in Egypt are being planned by the Department of Coastguards and Fisheries, a March 23 U. S. Embassy dispatch from Cairo states. Present plans call for cooperatives at Lake Manzala and Mariut, but the system could be extended to cover all lakes and sea fisheries. An appropriation of LE40,000 (US\$114,800) to finance the plan has been requested from the Egyptian Government. Of this total, one-half would be used as a loan fund to finance cooperative associations for the fishing industry, and one-half as a gift from the Government for building construction and purchase of refrigerated trucks.

The importance of the plan to the national economy was outlined by officials of the Department. It was explained that the cooperatives would be private. The Government would assist in formulation not only because of the benefit to the national economy, but to improve the social welfare of Egypt's fishermen. The fishermen now live under worse conditions than other groups. Plans include building model communities for the fisherman, with improvements in health, education, and social conditions. Officials believe that the betterment of fishermen's living conditions will result in increased production to help meet Egypt's ever-growing food demands.



German Federal Republic

TUNA FREEZERSHIP TO OPERATE OFF PERU: A German whaling company in Hamburg has accepted from a shipyard in Cuxhaven the freezership Caribia, 1,163 gross registered tons, according to the March 6 Dansk Fiskeritidende, a Danish trade paper. The vessel will operate as a freezership for tuna off the Peruvian coast. It has 18 freezing chambers and can freeze 22 tons of tuna daily. Despite the tropic heat, the hold for storing the tuna can be maintained at -4° F. The vessel has a 1,200-hp. motor and a speed of 12 knots. It carries a crew of 21, plus 12 fishery workers.



Iceland

EXPORTS OF FISHERY PRODUCTS, 1952: Exports of fishery products from Iceland in 1952 amounted to 164,292 metric tons, valued at 580,221,000 kronur (US\$35,596,000), according to the National Bank of Iceland's January 1953 Statistical Bulletin (see table). This was a decrease of 21 percent in quantity and 14 percent in value when compared with 1951 exports of 207,354 metric tons, valued at 678,492,000 kronur (US\$41,625,000).

Uncured salted fish was the leading item (on the basis of quantity) shipped out of Iceland in 1952, followed by frozen fish (mostly fillets), and fresh fish.

Icelandic Exports of Fishery Products, 1951-52						
	1 9 5 2			1 9 5 1		
	Quantity	Value		Quantity	Value	
	Metric Tons	1,000 kr.	US\$	Metric Tons	1,000 kr.	US\$
Fresh Fish	29,000	34,266	2,103,000	52,164	70,877	4,351,000
Frozen Fish:						
Herring	1,863	3,618	222,000	1,142	2,474	152,000
Other	29,057	173,720	10,649,000	35,182	177,582	10,886,000
Total	30,920	177,338	10,871,000	36,324	180,056	11,038,000
Salted Fish:						
Herring, cured	11,867	44,946	2,759,000	17,425	60,792	3,732,000
Other, uncured	41,799	153,455	9,420,000	23,373	62,614	3,844,000
" dried	5,309	33,847	2,078,000	11,775	66,759	4,098,000
" washed & pressed	-	-	-	597	1,626	100,000
" "wings"	2,611	7,589	466,000	1,054	2,308	142,000
Stockfish	2,356	19,649	1,206,000	1,045	7,665	471,000
Total	63,942	259,486	15,929,000	55,269	201,764	12,387,000
Fish Meal:						
Herring	4,500	9,729	596,000	5,131	10,743	659,000
Ocean perch	2,875	5,748	352,000	17,430	33,720	2,067,000
Other	15,684	32,384	1,985,000	13,884	27,316	1,674,000
Total	23,059	47,861	2,933,000	36,445	71,779	4,400,000
Fish Oil:						
Herring	1,588	6,808	417,000	11,708	72,020	4,415,000
Ocean perch	1,322	4,029	247,000	3,954	21,909	1,345,000
Cod liver	8,645	32,309	1,983,000	5,227	37,156	2,281,000
Total	11,555	43,146	2,647,000	20,889	131,085	8,041,000
Canned Fish	183	1,317	81,000	392	2,631	162,000
Miscellaneous:						
Roe, frozen	131	613	38,000	575	2,079	128,000
" salted	1,411	4,946	304,000	1,004	2,966	182,000
" salted for bait ..	1,296	2,058	126,000	1,096	1,964	121,000
Total	2,938	7,617	468,000	2,675	7,009	431,000
Whale Products:						
Meat, frozen	1,488	5,574	342,000	318	559	34,000
Meal	393	733	45,000	843	1,356	83,000
Oil	914	2,883	177,000	2,035	11,376	698,000
Total	2,795	9,190	564,000	3,196	13,291	815,000
Grand Total	164,292	580,221	35,596,000	207,354	678,492	41,625,000

* * * * *

MOTOR BOAT CURRENCY RETENTION SCHEME EXTENDED: The Icelandic Currency Retention Scheme, commonly known as the "Motor Boat Currency," a form of indirect subsidy to the Icelandic motor boat fishing fleet, was extended for one year, effective February 5, 1953. The terms are unchanged, reports a February 16 U. S. consular dispatch from Reykjavik. The winter fishery began in January, before agreement had been reached on this extension, as the Icelandic Government had urged the industry to operate every day possible.

During the discussions of the scheme, the boat operators had made the collateral demand that the interest rate on operational loans to the industry by the National Bank and Fisheries Bank be again reduced to 5 percent. This rate was raised

to 7 percent in 1952. The Government acceded to this demand, but provided that the rate should be 5 percent for the first 6 months and 5½ percent for the second 6 months.

Following the agreement with the Government, the boat operators announced the prices to be paid to the fishermen for their shares in the catch (see table). The

Icelandic Ex-vessel Fish Prices for 1953, Established by the Union of Icelandic Fishing Vessel Owners (Motor-Boat Fleet Owners)								
Species	1953				1952			
	To Fishermen		To Boat Owners		To Fishermen		To Boat Owners	
	I.Kronur Per Kilo	US\$ Per Cwt.	I.Kronur Per Kilo	US\$ Per Cwt.	I.Kronur Per Kilo	US\$ Per Cwt.	I.Kronur Per Kilo	US\$ Per Cwt.
Cod:								
A. Other than caught with nets:								
Drawn	1.05	2.92	1.00	2.78	1.05	2.92	1.00	2.78
Dressed	1.37	3.81	1.30	3.62	1.37	3.81	1.30	3.62
Round	0.88	2.45	0.83	2.31	0.88	2.45	0.83	2.31
Split	1.55	4.31	1.48	4.12	1.55	4.31	1.48	4.12
B. Caught with nets:								
1. After one night:								
Drawn	1.05	2.92	1.00	2.78	-	-	-	-
Dressed	1.37	3.81	1.30	3.62	-	-	-	-
Round	0.88	2.45	0.83	2.31	-	-	-	-
Split	1.55	4.31	1.48	4.12	-	-	-	-
2. After two nights:								
Drawn	0.95	2.65	0.90	2.50	-	-	-	-
Dressed	1.23	3.43	1.17	3.26	-	-	-	-
Round	0.79	2.20	0.75	2.09	-	-	-	-
Split	1.40	3.90	1.33	3.70	-	-	-	-
3. After three nights:								
Drawn	0.74	2.06	0.70	1.95	-	-	-	-
Dressed	0.96	2.67	0.91	2.54	-	-	-	-
Round	0.61	3.74	0.58	1.61	-	-	-	-
Split	1.09	3.04	1.04	2.90	-	-	-	-
Haddock, if kept separate in the boat:								
Drawn	1.21	3.36	1.15	3.20	1.15	3.20	1.09	3.04
Dressed	1.57	4.37	1.49	4.15	1.48	4.14	1.41	3.93
Round	1.00	2.78	0.95	2.64	0.95	2.64	0.90	2.50
Wolfish (catfish) in good condition:								
Drawn	0.95	2.64	0.90	2.50	0.77	2.15	0.73	2.03
1/NO PRICES ESTABLISHED IN 1952.								

basic price is for cod, gutted with head on, and was set at I.kr. 1.05 per kilogram (US\$2.92 per cwt.), the same price as was paid last year. The prices to be paid in 1953 to boat operators by the buyers and processors were also announced. The buyers and processors basic price is I.kr. 1.00 per kilogram (US\$2.79 per cwt.) of gutted cod with head on.

A new classification--"netfish"--was added to the price schedules this year. This refers to cod which lie in the net for a period of from 1 to 3 nights, and prices the fish according to freshness. This reflects the fact that many boats are unable to take up all their nets when returning to port, but must return to the grounds the following day or later to collect them, and is an attempt to improve uniformity and quality at the processing plants.

Both price schedules show increases only for haddock, wolffish (catfish), and roe. Haddock and wolffish are the most desired Icelandic species on the U. S. market, but represent only a small proportion of the total catch in Icelandic waters.

Since the operators have agreed to pay the fishermen I.kr. 1.05 per kilo (US\$2.92 per cwt.) for cod and will receive only I.kr. 1.00 (US\$2.79 per cwt.) from the processing plants, it is obvious that they are depending upon the indirect subsidy of the motor-boat currency scheme to break even or show a profit. Since the fishermen won a substantial increase in their wage guarantee in the agreement which

preceded the price announcements, the success of the small boat operators depends more than ever upon the catch this year. They are placing great hopes that the extension of Icelandic territorial waters to four miles will result in an increased catch.

* * * * *

FISH PRODUCTION AND UTILIZATION, 1952: Production of fishery products in Iceland during 1952 totaled 336,760 metric tons, 9 percent less than in 1951 and 4 percent greater than in 1950 (see table), reports the February Statistical Bulletin of the National Bank of Iceland. Production of fish used for food increased over 1951--102 percent more fish was utilized for salting and 34 percent more fish was filleted. There was a big drop in the amount of fish used for fish meal and oil in 1952--the herring catch was 87 percent less than in 1951, while the utilization of other fish for reduction purposes was 90 percent less.

Iceland's Fish Production, 1952 with Comparisons			
How Utilized	C a t c h		
	1952	1951	1950
 (Metric Tons)		
Herring ^{1/} for:			
Meal and oil	7,677	59,360	27,171
Bait, frozen	8,085	5,060	7,272
Salting	16,185	20,090	27,257
Other fish ^{2/} (cod, etc.) for:			
Fresh, iced	28,755	52,300	32,178
Freezing and filleting	124,892	93,183	57,041
Canning	339	125	86
Salting	127,103	63,007	99,343
Stockfish	14,715	6,832	493
Home consumption	2,427	3,238	2,110
Meal and oil	6,582	67,460	70,076
Total	336,760	370,655	323,027
^{1/} WHOLE FISH.	^{2/} DRAWN FISH.		



Japan

POLICY ON TUNA EXPORTS IN 1953: Japanese Government officials and members of the tuna industry are holding discussions to formulate the policy on exports of tuna for the new Japanese fiscal year, April 1, 1953, to March 31, 1954. No official Government announcement has been issued as yet, but is expected shortly, reports a March 17 U. S. Embassy dispatch from Tokyo.

Reports indicate the Government favors continuing the policy of a quota and check prices on exports to the United States as was in effect during the past fiscal year. The last fiscal year's quota on frozen tuna was 21,000 short tons, but was originally established at 12,000 tons; canned tuna quota is 1,150,000 cases, originally fixed at 1,000,000 cases.

A discussion by producers and exporters indicates a strong desire for an initial quota of 30,000 tons for 1953. The canners have declared a production goal of 1,500,000 cases of tuna, but are withholding comment on the quota desired by them for export pending further study.

The Chairman of the Council on Tuna Exports (including producers of frozen tuna and canners) has proposed a meeting between tuna representatives of the United States and Japan to discuss the problem of exports before deciding on the Japanese policy for 1953. No agreement has been reached on this suggestion by members of the Council. Some elements in the Japanese tuna industry are optimistic that no definite action will be taken to apply a tariff on imports of frozen tuna into the United States. This feeling is influenced by (a) the defeat in the U. S. Senate (June 1952) of the bill to place a temporary tariff of 3 cents per pound on imports of fresh and frozen tuna; (b) a recent report that a bill had been defeated in the California State Assembly to levy a state tax equivalent to 3 cents per pound on frozen tuna imported from Japan (Mainichi, March 10); and (c) expectation of continued and added support from some United States canners opposing a tariff on imports of frozen tuna because they need Japanese tuna to meet their full production requirements.

* * * * *

PROPOSAL TO REMOVE FUR-SEALING BAN: The recently organized League for the Promotion of Japanese Fur Sealing has proposed that the Japanese Government's ban on pelagic fur sealing be removed to permit operations in the coastal waters of Japan. According to a recent press item (Nippon Kaizai, March 10), the League gave the following reasons for its proposals:

1. Results of the joint investigation of fur seals in coastal waters of Japan in 1952 by Canada, United States, and Japan have revealed that the continued restriction on fur-seal hunting would not substantially increase the supply of fur seals in Japanese waters.

2. The fur seals which migrate to Japanese waters feed on fish, hence are harmful to the Japanese fishing industry.

3. Approximately US\$2,800,000 per year could be realized from the sale of 50,000 pelts exported at an estimated value of US\$56 per pelt.

The League further proposed that, if operations are resumed, (a) the season should be from April through August, (b) hunting should be principally off Hokkaido and the eastern (Pacific) coast of Honshu, (c) the Government should license approximately 60 catcher boats averaging 20 to 30 gross tons each, and (d) the Government should limit the catch to less than 50,000 seals a year "to conserve the resource." It is also suggested that an association be formed to handle the sale of exports of the pelts. The Japanese Government has made no announcement on this proposal, reports a March 13 American Embassy dispatch from Tokyo.

This effort to remove the restrictions on Japanese fur sealing reflects a part of the policy and charges of the prewar period which led to the abrogation by Japan of the Fur Seal Convention in October 1941. One of the principal reasons given by the Japanese for that action was the charge that the fur seals were adversely affecting the fisheries by consuming large quantities of commercially valuable fish. Insufficient knowledge of fur-seal biology existed at that time to answer satisfactorily the criticism by the Japanese fishermen and other interests. Occupation authorities in October 1945 advised the Japanese Government that pelagic sealing would not be countenanced, in recognition of the provisions of the Fur Seal Convention of 1911. Evidence indicates that some illicit pelagic sealing was conducted despite this order.

By a cooperative arrangement of the Japanese Government and the Occupation Government, pelagic fur-seal investigations in the coastal waters of Japan were

begun in 1949 and continued in 1950. In 1952, the joint investigation was conducted on an intensive scale from February through June. Preliminary analysis of the 1952 data reveals that approximately 69 percent of the stomach contents of the seals examined (2,312) had no commercial value. The most important item in the fur seal's diet is lantern fishes. Answers to other questions on the source and maintenance of the fur seal resource in Japanese coastal waters are expected to be provided with the completion of the analysis of the 1952 data.

* * * * *

PEARL-SHELL FISHING IN ARAFURA SEA POSTPONED: The sailing date of the pearl-shell fishing expedition to the Arafura Sea (north of Australia) has been postponed by the Japanese Government. The Australian Government requested that the expedition's departure date be postponed until a Japan-Australia Fisheries Agreement has been reached. The Japanese Government has already accepted the proposal from the Australian Government to open negotiations for such an agreement at Canberra on April 13, 1953. In case an agreement is not reached within one month after the commencement of negotiations, the sailing of the pearl-shell fishing expedition will be subject to further consideration by the two governments.

JAPANESE GOVERNMENT



Malaya

EXPERIMENTS WITH RING-NET FISHING GEAR: Experiments being conducted in the use of the ring-net type of fishing gear have shown very encouraging results, according to a recent report of the Federation of Malaya's Fisheries Department. Since December 1952, the Trustful IV, a fishing smack purchased in Scotland and manned by a Scotch crew, has been used in experimental ring-net fishing operations off the coast of Perak. At first, the mesh (designed for herring) proved to be too large for use in Malayan waters. However, after switching to a net of smaller mesh, results improved at once, reports a March 18 U. S. consular dispatch from Kuala Lumpur.

The Scotch crew is now training Malays in the use of a ring-net designed for use in Malayan seas. It combines the features of Malayan and European nets. The Department of Fisheries says that the fishing operation is almost completely mechanized, from shooting out the net to hauling in the fish. The experimental fishing unit, which has been operating with one large boat and one smaller boat, has been catching as much fish as the most modern local craft, the Fisheries Department claimed. Moreover, the Trustful IV is manned by only 8 fishermen (4 Scotch and 4 Malays) as compared to 24 men who operate one of the modern local fishing boats. The fishermen on the Trustful IV were especially proud when on a recent expedition they brought in a ton of fish, whereas the local craft operating in the same area caught no fish at all. Machinery is also used for unloading the fish.

The Fisheries Department plans to have the fishing unit operated entirely by Malays by the end of August 1953. The Trustful IV, already commanded by a Malay, will then be used for demonstration and training of additional fishing crews in the Federation. A spokesman of the Fisheries Department said that local fishermen will also be taught how to use the ring-net gear to increase their catch of ikan kembong, a low-priced fish much in demand by the Malayan workers and farmers.



Mexico

REVIEW OF THE FISHERIES, 1940-49: The Mexican catch of fishery products in 1949 totaled 71,866 metric tons, valued at 103.8 million pesos (US\$12 million). There has been a steady increase in the Mexican fish catch each year since 1940 (table 1); the increase has averaged about 13 percent each year. However, it is

Table 1 - Mexican Fisheries Catch, 1940-49

Year	S h r i m p			S a r d i n e			O t h e r S p e c i e s			T o t a l		
	Qty.	Landed Value		Qty.	Landed Value		Qty.	Landed Value		Qty.	Landed Value	
	Metric Tons	Millions of Pesos	Millions of US\$	Metric Tons	Millions of Pesos	Millions of US\$	Metric Tons	Millions of Pesos	Millions of US\$	Metric Tons	Millions of Pesos	Millions of US\$
1949	18,499	42.3	4.9	18,696	26.4	3.0	34,671	35.1	4.1	71,866	103.8	12.0
1948	18,844	44.9	6.5	17,372	23.5	3.4	31,168	39.6	5.8	67,384	108.0	15.7
1947	11,894	23.5	4.8	11,495	14.9	3.1	30,861	51.2	10.5	54,250	89.6	18.4
1946	10,462	14.4	3.0	12,555	12.2	2.5	31,755	33.9	7.0	54,772	60.5	12.5
1945	7,401	7.5	1.5	8,180	7.5	1.5	36,638	28.8	6.0	52,219	43.8	9.0
1944	2/	2/	2/	2/	2/	2/	2/	2/	2/	39,901	2/	2/
1943	4,666	4.2	.9	2,892	2.1	.4	25,432	15.1	3.1	32,990	21.4	4.4
1942	4,612	3.8	.8	1,937	1.4	.3	21,425	16.7	3.4	27,974	21.9	4.5
1941	3,209	2.0	.4	2,877	3.4	.7	19,951	9.2	1.9	26,037	14.6	3.1
1940	5,102	3.4	.7	2,660	1.4	.3	15,861	8.9	1.8	23,623	13.7	2.8

1/CONVERTED TO US\$ AS FOLLOWS: 1940--4.85 PESOS PER US\$1.00; 1941-47--4.86 PESOS PER US\$1.00; 1948--6.88 PESOS PER US\$1.00;

1949--8.65 PESOS PER US\$1.00.

2/DATA NOT AVAILABLE.

not likely to increase at this pace in the future because of reduced supplies of the main export species and the slow expansion of the domestic market. This is based on the "Fisheries" section of The Economic Development of Mexico, a recent report issued in Mexico. The report is a study made by the Combined Mexican Working Party of the International Bank for Reconstruction and Development and the Mexican Government (Nacional Financiera).

The most important development in the Mexican fisheries since 1940 has been the great increase in the shrimp and sardine catches, which now account for more than half the total catch. The shrimp catch, most of which is exported, rose from 5,100 metric tons in 1940 to 18,500 metric tons in 1949. The sardine catch, consumed almost entirely within the country, increased from 2,700 to 18,700 tons in the same period. The catch of other species, sold mainly in the domestic market without processing, more than doubled between 1940 and 1945, but decreased somewhat since then because of the concentration on shrimp and sardine fishing in the Gulf of California and Lower California.

The catch increase was made possible by the expansion of the Mexican fishing fleet--from 7,900 tons in 1941 to 23,500 tons in 1949 (table 2)--and by the establishment of a fish canning and freezing industry. In 1950 this industry included 68 plants, mainly for processing shrimp and sardine. These are located mostly on the Gulf of California and in Lower California.

Fish exports, principally shrimp and small amounts of abalone and lobster, have increased from 8,200 metric tons, valued at 7 million pesos (US\$1.4 million) in 1940 to 22,900 tons and 163 million pesos (US\$18.8 million) in 1949 (table 3). In each year, exports were equivalent to about one-third of the total production.

Although the United States market could absorb more Mexican shrimp and abalone at remunerative prices, there is no outlook for a substantial expansion of these exports because of the scarcity of these species. The shrimp catch in the Gulf of California, the main producing center, has been declining sharply in the 1950/51 and 1951/52 seasons. It is possible, nevertheless, that the adoption of conservation methods, towards which some recent measures have been directed, could raise the catch again to former or even somewhat higher levels. New fishing areas are being opened near Mazatlan and Salina Cruz on the Pacific Coast and further expansion

in Campeche on the Mexican Gulf Coast is possible. Increased production in these regions could compensate for the decline in the Gulf of California area and allow for some increase over the 1949 level if production in the Gulf of California again increases. There seems to be no possibility of expanding the catch of the better type of abalone now being taken; prices are much lower for the other available types.

Prospects for developing exports of additional fishery products are not good. The output of sardines could be increased substantially even with existing equip-

Table 2 - Mexican Fishing Fleet, 1941-49 (No. of Registered Vessels and Net Tonnage)

No. of Registered Vessels	1949	1948	1947	1946	1945	1944	1943	1942	1941
	No.	No.	No.	No.	No.	No.	No.	No.	No.
1 to 3 Tons	4,562	4,183	3,928	4,712	4,015	3,934	3,510	3,463	3,185
3.1 to 10 Tons	561	598	562	729	620	738	612	493	334
10.1 to 50 Tons	407	385	350	296	260	158	141	97	29
50.1 to 100 Tons	33	29	18	12	15	2	1	3	-
Over 100 Tons	17	18	7	-	-	-	-	-	-
Total Vessels	5,580	5,213	4,865	5,749	4,910	4,832	4,264	4,056	3,548
	Tons	Tons	Tons	Tons	Tons	Tons	Tons	Tons	Tons
1 to 3 Tons	6,178	5,883	5,279	6,713	6,163	6,107	5,663	5,895	4,987
3.1 to 10 Tons	3,478	3,281	3,213	4,697	3,936	4,784	3,872	3,054	2,317
10.1 to 50 Tons	9,008	8,033	6,422	9,006	5,206	2,633	2,987	1,886	577
50.1 to 100 Tons	2,216	1,948	1,228	770	822	124	60	228	-
Over 100 Tons	1/2,622	3,528	942	-	-	-	-	-	-
Total Tonnage	23,502	22,673	17,084	21,186	16,127	13,648	12,582	11,063	7,881

1/IN ADDITION, RENTED FOREIGN VESSELS OF MORE THAN 100 TONS TOTALED 816 TONS IN 1949

NOTE: DATA FROM NACIONAL FINANCIERS UNPUBLISHED STUDY ON MEXICAN FISHERIES.

ment and facilities, but exports to the United States are hampered by high tariffs. Tuna fishing on the high seas would require a basic reorientation of the Mexican fishing industry and considerable new investment. A Mexican tuna-fishing industry must also expect to encounter difficulties in competing with the tuna industries of other countries because the Mexican labor law requirements would result in high

Table 3 - Mexican Exports of Principal Fishery Products, 1940-50

Year	S h r i m p			S p i n y L o b s t e r			A b a l o n e			S a r d i n e		
	Qty.	Export Value		Qty.	Export Value		Qty.	Export Value		Qty.	Export Value	
	Metric Tons	Millions of Pesos	Millions of US\$	Metric Tons	Millions of Pesos	Millions of US\$	Metric Tons	Millions of Pesos	Millions of US\$	Metric Tons	Millions of Pesos	Millions of US\$
1950	17,953	159.1	18.4	927	4.0	.5	3,580	11.4	1.3	57	0.1	-
1949	19,115	144.0	16.6	845	2.4	.3	3,771	12.8	1.5	347	0.7	.1
1948	11,002	64.9	9.4	979	1.9	.3	3,023	7.8	1.1	681	1.2	.2
1947	6,146	25.5	5.2	737	1.5	.3	2,343	6.5	1.3	391	0.8	.2
1946	6,254	20.1	4.1	813	1.4	.3	2,033	5.8	1.2	136	0.3	.1
1945	4,711	15.1	3.1	493	0.7	.1	755	1.4	.3	580	1.0	.2
1944	3,753	11.9	2.4	474	1.1	.2	597	1.1	.2	-	-	-
1943	3,863	9.7	2.0	956	1.1	.2	574	0.9	.2	2	-	-
1942	2,583	2.7	.5	563	0.3	.1	552	0.7	.1	-	-	-
1941	1,356	1.2	.2	810	0.4	.1	1,248	1.7	.3	-	-	-
1940	4,120	3.6	.7	537	0.3	.1	1,715	1.7	.4	-	-	-

1/ CONVERTED TO US\$ AS FOLLOWS: 1940--4.85 PESOS PER US\$1.00; 1941-47--4.86 PESOS PER US\$1.00; 1948--6.88 PESOS PER US\$1.00; 1949--8.65 PESOS PER US\$1.00.

operating costs. Moreover, it can be assumed that the United States, the only major market, would take whatever steps may be necessary to protect its own tuna-fishing industry if confronted with increased supplies of tuna from abroad. On the whole, therefore, it is improbable that the volume of fishery products exports from Mexico will continue to expand more than slightly over the present level.

In view of the not too favorable outlook for exports, the best opportunity for expanding Mexican fisheries therefore lies in production for the domestic market.

Although a remarkable increase in the consumption of fish occurred during World War II, when consumption more than doubled in five years, the amount of fishery products consumed annually in Mexico is still less than 2 kilograms (4.4 pounds) per person (table 4). The level of consumption has been almost stationary since

Table 4 - Mexico's Apparent Consumption of Fishery Products, 1940-49

Year	Production (plus)	Imports (minus)	Exports	Total Apparent Consumption	Per-Capita Consumption
	(Metric Tons)				Lbs.
1949	71,866	278	22,949	49,195	4.4
1948	67,384	1,098	15,503	52,979	4.8
1947	54,250	1,365	9,752	45,863	4.3
1946	54,772	1,618	11,422	44,968	4.3
1945	52,219	556	13,284	39,491	3.9
1944	39,901	680	9,092	31,489	3.2
1943	32,990	237	11,415	21,812	2.3
1942	27,974	327	7,363	20,938	2.2
1941	26,037	675	5,492	21,220	2.3
1940	23,623	874	8,155	16,342	1.8

1946. There are no imminent limits on the supply of species consumed in the domestic market; however, the low level of incomes, inadequate facilities for transporting and handling fish, and an inefficient distribution system operating with high margins seriously restrict the local market and the possibilities for expansion.

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SINALOA SHRIMP FISHERY TRENDS, FEBRUARY 1953: Sinaloa shrimp exports to the United States in February totaled 560,616 pounds, 45 percent less than in January, but 87 percent more than in February 1952 (see table).

Sinaloa Shrimp Exports to United States, February 1953 with Comparisons

Port	February 1953	January 1953	February 1952
	Lbs.	Lbs.	Lbs.
Mazatlan....	517,366	667,019	300,291
Topolobampo.	43,250	346,030	-
Total.....	560,616	1,013,049	300,291

The season for shrimp fishing in the bays on the west coast of Mexico was declared closed from March 1 to April 15, 1953, by the Secretaria de Marina, a March 9 U. S. consular dispatch from Mazatlan states. This will be an experiment

in an effort to stem the reported depletion of shrimp stocks off the West Coast. It is believed that during the 45-day period that shrimp fishing will be banned, the shrimp will migrate to the bays and estuaries for spawning, later returning to the sea to grow. However, unlike last year, deep-sea shrimp fishing will continue to the end of the season on July 1.



Colony of Mozambique

REVIEW OF THE FISHERIES, 1950: The total catch of fishery products in Mozambique during 1950 amounted to 9,271,280 pounds as compared with the 1949 catch of 8,557,289 pounds, reports a recent dispatch from Lourenco Marques. However, even with this increase there was still not sufficient fish to supply the domestic requirements. The 1950 catch consisted of 7,916,713 pounds of fresh fish, 181,072 pounds of shellfish, and 1,173,493 pounds of miscellaneous fishery products.

The two fishing companies that operated in Mozambique in 1949 dissolved during 1950. This placed increased importance on the activities of small and independent fishermen. Goanese and native fishermen operating with small trawlers and sailing vessels were the backbone of the industry. In 1950 a total of 6,177 persons were engaged in fishing as compared with 4,753 in 1949. There were 12 trawlers and 1,303 sailing vessels operating in 1950 as against 7 trawlers and 1,042 sailing vessels in 1949.

A United States citizen has chartered a trawling vessel from the Mozambique Government and entered the spiny lobster fishing business. Under the terms of the contract all fish taken on each voyage will be sold on the local market at fixed prices, thus augmenting the local food supply. The spiny lobsters will be exported to the United States. Aside from increasing the food supply, the dollar revenue of the province will be increased.



Norway

EXPORTS OF FISHERY PRODUCTS, 1952: Although the quantity of fishery products exported by Norway in 1952 was somewhat below that of 1951, the over-all value was somewhat higher. The principal exports were fish meal, salted herring, fresh and iced herring, klipfish (salted and sun-dried cod), fresh and iced fish other than herring, frozen herring, stockfish (unsalted dried groundfish), and canned fish (table 1).

Table 1 - Principal Norwegian Fishery Products Exports, 1951-521/				
Product	1952		1951	
	Quantity	Value	Quantity	Value
	Metric Tons	US\$	Metric Tons	US\$
Herring, fresh & iced	49,784	2,991,713	61,394	3,578,103
Herring, frozen	25,372	1,945,365	20,225	1,487,273
Other fish, fresh & iced	25,910	6,497,893	22,466	4,853,986
Filletts, frozen	12,661	4,559,129	11,374	3,477,762
Fish, whole, frozen	11,254	3,190,129	10,096	3,070,210
Stockfish (unsalted dried groundfish) ...	23,385	15,222,893	20,809	10,886,713
Klipfish (salted & sun-dried cod)	58,630	30,080,337	50,923	23,732,168
Herring, salted	73,936	9,041,573	72,231	7,452,587
Herring, spiced	2/	2/	5,697	1,025,454
Herring, smoked	2/	2/	2,806	554,965
Salted fish	813	215,730	7,062	1,455,944
Canned fish	24,374	15,541,152	34,532	20,361,259
Meal, herring and other fish	125,256	14,734,551	129,283	4,879,441
Lobster	2/	2/	572	925,455
Shrimp	2/	2/	1,340	878,881
	<u>US Gals.</u>	<u>US\$</u>	<u>US Gals.</u>	<u>US\$</u>
Cod-liver oil, medicinal	1,334,676	1,799,157	2/	2/
Cod-liver oil, other than medicinal	4,839,126	5,571,208	2/	2/

1/ IN THE 1952 STATISTICS SOME MINOR PRODUCTS ARE NOT INCLUDED.

2/ DATA NOT AVAILABLE FOR 1952.

The principal items exported to the United States were fish meal, canned fish and shellfish, and frozen filletts (table 2). Of the 125,256 metric tons of fish

Table 2 - Principal Norwegian Fishery Products Exports to United States, 1952¹/

Product	Quantity	Value
	Metric Tons	US\$
Fillets, frozen	6,142	2,347,612
Stockfish	545	432,022
Herring, salted	4,092	903,511
Fish, salted	172	37,500
Canned fishery products	9,580	6,274,579
Meal, herring and other fish	38,110	4,366,994
	US Gallons	US\$
Cod-liver oil, medicinal	236,236	334,270
Cod-liver oil, other than medicinal	175,180	261,517

¹/SOME MINOR PRODUCTS ARE NOT INCLUDED.

meal exported by Norway, 30 percent or 38,110 tons were shipped to the United States. Canned fish and shellfish exports to the United States amounted to 9,580 tons--39 percent of the total Norwegian exports. Norway's exports of frozen fish fillets totaled 12,661 tons, of which 6,142 tons or 49 percent were shipped to the United States.

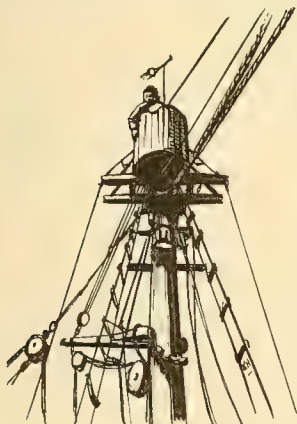
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AUTOMATIC WEIGHING MACHINE FOR HERRING: Herring are automatically weighed into boxes at a large plant in Bergen, Norway, by a weighing machine designed by Magnus K. Johannessen of that city. He has specialized in the design and construction of packaging and weighing machines, according to the February 25 issue of Fiskaren, a Norwegian trade paper. His solution to the problem of whether it is better to weigh or measure herring is a machine which has a capacity of 200 weighings per hour and is accurate to within one or two herring. The herring are weighed in a rotating drum and flow evenly from the drum into the box. Although the equipment is designed for weighings of small quantities, the same system can be used with herring for reduction plants. Weighing machines with a capacity of 100 tons per hour or more can be built, it is claimed.

* * * * *

WHALE AND SPERM OIL PRODUCTION, 1952/53: Norway's production of whale and sperm oil in the 1952/53 season was 135,200 long tons, including production of the Antarctic whaling fleets and production at the Norwegian land station at Husvik Harbour, South Georgia, but not including production at shore stations in Norway.

The 1953 Antarctic pelagic whaling season ended at midnight, March 16, 1953, with the Norwegian share of the total catch reduced approximately in proportion to her reduced participation this year. Norway entered the race for whales with only 7 expeditions, compared to 10 in 1952 (other countries sent a total of nine expeditions each time). Three Norwegian floating whale factories were transferred to more profitable tanker operations.



The Norwegian Antarctic pelagic whaling fleets this season produced 738,100 barrels of whale oil and 27,400 barrels of sperm oil (6 barrels equal 1 long ton), compared with 971,800 barrels of whale oil and 116,300 barrels of sperm oil during the 1951/52 season (table 1). As in previous years, the Norwegian companies which engage in pelagic whaling sold their 1952/53 catch through a common marketing pool.

While most of the seven Norwegian expeditions which participated this season accounted for more whale oil

than they did in 1952, the total catch was only 76 percent of last season's. The production of sperm oil this season was uniformly poor, with the result that the

Table 1 - Norway's Antarctic Whale and Sperm Oil Production, 1946/47-1952/53 Seasons				
Season	Antarctic Whaling Fleets		Land Station (Husvik Harbor, South Georgia)	
	Whale Oil	Sperm Oil	Whale Oil	Sperm Oil
	Bbls.1/	Bbls.1/	Bbls.1/	Bbls.1/
1952/53 ^{2/}	738,117	27,387	43,308	2,332
1951/52 ^{2/}	971,829	116,256	47,077	1,481
1950/51 ^{3/}	935,821	126,439	50,996	3,028
1949/50	988,096	60,336	55,085	2,970
1948/49	935,968	114,152	55,283	2,624
1947/48	939,827	55,288	54,453	1,263
1946/47	903,661	33,667	42,448	1,072

1/SIX BARRELS EQUAL 1 LONG TON.

2/PRELIMINARY.

3/REVISED.

for the first time, helicopters and modern ultrasonic by some of the Norwegian expeditions, the authorities of about 800,000 barrels. Helicopters were used this Norhval expeditions; ultrasonic equipment designed to bring whales to the surface was installed on some of the catchers on an experimental basis. After the first favorable reports began coming in, moreover, it appeared that the Government's estimate had been pessimistic. However, during the latter part of the season, some of the Norwegian expeditions were hampered by bad weather.

The total catch for the expeditions of all countries participating this year did not come so close to the international limit of 16,000 blue-whale units^{1/} as it had in 1952. With 7 of the 16 expeditions participating this year, Norway accounted for about 5,000 of the approximately 15,000 units reported. Last year the proportion was 7,151 out of 15,875 units.

total was down to 23 percent of last season's. Because of the poor market for sperm oil this year, the Norwegian whaling fleet arrived in the Antarctic just prior to the opening of the blue-whale season, thus missing the usual pre-season sperm-whale operations. The entire fleet, furthermore, returned directly to Norway at the close of the regular season.

Since the average number of catchers per expedition was larger this year and since, equipment were taken along had been counting on a catch year by the Thorshavet and

Table 2 - Whale and Sperm Oil Production by Shore Stations in Norway, 1947-50

Year ^{2/}	Whale Oil	Sperm Oil
	Bbls.1/	Bbls.1/
1952	12,224	2,537
1951	11,045	3,734
1950 ^{3/}	12,133	3,846
1949	10,444	1,043
1948	8,495	2,766
1947	10,030	841

1/SIX BARRELS EQUAL 1 LONG TON.

2/SUMMER SEASON.

3/REVISED.

Table 3 - Utilization of Whale Oil Production, 1950/51-1952/53 ^{1/}			
Use	1952/53 ^{2/}	1951/52 ^{3/}	1950/51 ^{3/}
 (Long Tons)		
Export--To:			
United Kingdom	47,000	8,500	29,800
Sweden	5,000	9,000	7,500
Western Germany	21,200	40,600	12,500
Denmark	10,000	6,000	3,000
Belgium	3,300	5,000	-
Netherlands	13,000	6,000	5,000
France	8,000	6,000	-
Total	107,500	81,100	57,800
For processing and subsequent export ..	-	50,000	50,000
For processing and domestic consumption	23,000	40,000	41,300

1/FROM TRADE SOURCES. 2/PRELIMINARY. 3/REVISED.

1/ONE BLUE-WHALE UNIT EQUALS 1 BLUE WHALE, 2 FIN WHALES, OR 2^{1/2} HUMPBACK WHALES.

The stabilization of the whale-oil price at the comparatively low level of £70 (US \$196) per long ton makes the reduced production an even harder blow to the Norwegian economy. From a post-Korea high of £170 (US\$476), the price had sunk to £120 (US\$336) by the fall of 1951. Then, very rapidly in January 1952 the price dropped to £70 (US \$196). Norway's 1951/52 season production of whale oil was finally disposed of at an average of £82 (US\$230) per long ton. The average price for the 1952/53 season was £71 10s. (US\$200) per long ton.

In spite of a few advance sales at higher prices, the average price for this season's production has been only £71 10s. (US\$200) per long ton. This year, for a change, practically the entire production had been sold before the close of the season. Considering both the reduced production and lower average price, it appears that Norway's income from pelagic whaling in 1953 will be less than two-thirds of the 1952 figure.

Most of Norway's whale-oil production was exported (table 3).

The Norwegian shore station on South Georgia this season produced 43,300 barrels of whale oil and 2,300 barrels of sperm oil (table 1). This was less than the previous season's production of 47,100 barrels of whale oil and 1,500 barrels of sperm oil, an April 29 American Embassy dispatch from Oslo points out.

In addition to the above, shore stations in Norway produced 14,800 barrels of sperm and whale oil--about the same as during the previous season (table 2).



Republic of the Philippines

IMPORTS AND EXPORTS OF FISHERY PRODUCTS, 1951-52: Philippine total imports of fishery products from all countries in 1952 were valued at 15,826,000 pesos (US\$7,913,000), a decrease of 33 percent from the 1951 value of 23,709,000 pesos (US\$11,854,500). The Philippines normally import large quantities of California sardines, but in 1952 that fishery was almost a complete failure; this no doubt accounted for the large drop in imports of fishery products.

Philippine exports of fishery products to all countries in 1952 were valued at 96,000 pesos (US\$48,000), 2 percent less than in 1951 when exports were valued at 98,000 pesos (US\$49,000).



Portugal

COD INDUSTRY: Production of Salted Cod, 1952/53: The landings of wet-salted cod in Portugal during the 1952/53 season by the fleets fishing on the banks off Newfoundland and Greenland amounted to 53,240 metric tons (table 1). This is a 9-percent increase over the catch for the 1951/52 season, reports a March 20 U. S. Embassy dispatch from Lisbon. The amount of dried cod obtained from this catch is

Table 1 - Portuguese Cod Landings from Banks Off Newfoundland and Greenland, 1950/51-1952/53												
Season	C a t c h			P r o d u c t i o n								
	Wet-Salted Cod			Dry-Salted Cod			Cod-Liver Oil			Other Byproducts ^{1/}		
	Quantity Metric Tons	Value Contos	Value US\$	Quantity Metric Tons	Value Contos	Value US\$	Quantity Metric Tons	Value Contos	Value US\$	Quantity Metric Tons	Value Contos	Value US\$
1952/53 season:												
45 schooners	23,453	2/	2/	2/	2/	2/	2/	2/	2/	2/	2/	2/
21 trawlers	29,787	2/	2/	2/	2/	2/	2/	2/	2/	2/	2/	2/
Total	53,240	2/	2/	2/	2/	2/	2/	2/	2/	2/	2/	2/
1951/52 season:												
45 schooners	24,528	147,168	5,083,000	17,840	188,797	6,521,000	284	1,424	49,000	276	1,074	37,100
20 trawlers	24,431	146,587	5,063,000	17,938	189,828	6,557,000	1,385	7,762	268,000	141	607	21,000
Total	48,959	293,755	10,146,000	35,778	378,625	13,078,000	1,169	9,186	317,000	417	1,681	58,000
1950/51 season:												
45 schooners	24,105	144,629	4,995,000	17,512	179,293	6,193,000	154	1,208	42,000	336	1,270	43,900
18 trawlers	27,367	164,206	5,672,000	19,367	193,384	6,679,000	986	6,066	210,000	231	979	33,800
Total	51,472	308,835	10,667,000	36,879	372,677	12,872,000	1,140	7,274	252,000	567	2,249	77,700

^{1/}HEADS, TONGUES, ETC.

2/NOT AVAILABLE.

not yet available as the fish is still in the process of drying; however, it is expected to total about 38,680 metric tons. Total production of cod-liver oil and other byproducts from the 1952/53 catch are not yet available.

Imports of Salted Cod, 1951-52: Portuguese imports of salted cod in 1952 totaled 11,693 metric tons (table 2), valued at 99,189 contos (US\$3,426,000). This is 47 percent less than the 22,027 metric tons imported in 1951, valued at 204,334 contos (US\$7,058,000). France was the leading supplier for the first time, while

Table 2 - Portuguese Imports of Cod, 1951-52		
Country of Origin	1952	1951
	.. (Metric Tons) ..	
Canada	3,430	7,938
United Kingdom	294	225
France	4,179	-
Norway	3,682	10,923
Ireland	-	1,550
Denmark	-	1,050
Greenland	-	341
Others	108	-
Total: Quantity	11,693	22,027
Value (Contos)	99,189	204,334
Value (US\$)	3,426,000	7,058,000

imports from traditional sources fell substantially. In 1952 Norwegian shipments decreased 66 percent and Canadian shipments were off 57 percent from 1951. The reduction appears to have been due to high prices and, in the case of Canada, to the fact that payment in dollars was required for the first time. Previously, payment in sterling had been accepted, even after Newfoundland became a part of Canada. The Portuguese Supply Commission absorbed losses due to higher prices of imported cod in 1952.

In December retail price increases of 18 to 23 percent were announced for imported cod to offset the 25-percent increase in the cost of importing. At the same time, it was announced that "yellow-cured"¹ cod will be produced in Portugal for sale at the same price as the imported product.

The Minister of Economy stated that consumption for 1953 is estimated at 79.2 million pounds, of which 15.8 million pounds will be imported and 63.4 million pounds supplied by the Portuguese fishing fleet. Of the latter, 10.6 million pounds will be "yellow-cured."

The supply of salted cod appeared to be adequate throughout 1952 despite the substantial reduction in imports. It would appear that a further reduction in imports is anticipated for 1953.

All cod produced and imported was for domestic consumption. There were no exports.

¹/IMPORTED COD IS "YELLOW-CURED" AND IS MUCH DRIER THAN PORTUGUESE NATIONAL CURED.



Thailand

GOVERNMENT-SUPERVISED WHOLESALE FISH MARKET: The new wholesale fish market recently completed at Bangkok commenced operations in April under the supervision of the Thai Government, states a March 6 dispatch from the U. S. Embassy at Bangkok. The new market was built at a cost of 6 million baht (US\$478,000). A sum of 11 million baht (US\$876,000) has been appropriated from the 1953 national budget for the installation of an ice and cold-storage plant.

Thirteen fish-auctioneering companies (including one that is government-sponsored) have registered to operate at the market. Previously, 9 brokers controlled the fresh marine-fish trade in Bangkok.



THAILAND FISHERMEN CULLING THEIR CATCH ACCORDING TO SPECIES AND SIZE. WOMAN IN CENTER IS A FISH BUYER.

The objectives of this project are: (1) to encourage the organization of fisherman's cooperatives, (2) to more closely supervise the lending practices of the brokers; and (3) to improve distribution and marketing methods.



United Kingdom

STATUS OF ICELANDIC-BRITISH FISHING DISPUTE: There is some speculation that the Icelandic-British fishing dispute may be considered at the meeting of the Permanent Commission of the North European Overfishing Convention which is scheduled to take place in London on May 5. This possibility was reported in the April 6 issue of the Manchester Guardian.

The article traces the course of the dispute through its protracted negotiations on several levels, and attempts to assess the attitude of the trawler owners to the consideration of the dispute by the Permanent Commission, reports an April 13 United States Embassy dispatch from London. Excerpts from the article follow:

"...Here, on the Humber, leaders of the trawling industry at Grimsby and Hull are eagerly awaiting the meeting of the permanent commission, confident that their condemnation of Iceland's action and subsequent attitude will be upheld.

"The Icelandic Government, it will be remembered, announced in May (1950) that, as a measure to conserve fishing grounds, the fishing limits off the Icelandic coasts would be extended from the old line drawn three miles from the coast to a new limit drawn four miles from a line linking coastal headlands. To British trawlers, long accustomed to fish in the bays of Iceland's deeply-indented coast, the extension of enclosed waters was a heavy blow, depriving them, as they estimate, of some one million hundredweights of better quality fish every year. Their reply was to refuse at Hull and Grimsby to allow the Icelanders to use their own privately-owned unloading facilities.

"When Icelandic trawlermen countered this with a plan to form a company to provide landing facilities of their own, British skippers and mates refused to put to sea at all until they had an understanding from merchants not to handle any Icelandic fish. There, with Icelandic trawlers virtually excluded from British ports, the matter now rests in a stalemate.

"Representations from the British Government to Iceland have not been very productive, and in any case, being a signatory of the Overfishing Convention, Britain is somewhat inhibited in the matter of unilateral action. Under the provisions of the General Agreements on Tariffs and Trade the British Government could not readily limit the landing of foreign-caught fish at British ports, so, although the trawler-owners advocate governmental regulation of imports as a general policy, it is to the Overfishing Convention rather than the Government that they are looking for immediate support.

"Apart from uncertainty about the power of their Government to help them, the British trawlermen have another reason for wanting the dispute heard at international level. They are extremely apprehensive that other countries may follow Iceland in extending fishing limits. Iceland only acted after the Hague Court had upheld a similar Norwegian claim. In the face of this, Iceland felt safe in extending her limits, and so, say the men of Hull and Grimsby, might Denmark; and, in doing so, close the valuable grounds around the Faroe Islands. Again, Iceland, and later others like her, might not for long be content with the headland line. It is believed in Grimsby that the line of the Continental Shelf, the hundred-fathom line, is already being talked about.

"Iceland at present forbids her own trawlers to fish where those of other nations are prohibited; but there are many in Grimsby who have no faith that she will retain this equality of treatment once the new territorial-water line has been established and internationally recognized...."



Venezuela

FISHING REGULATIONS: Two decrees restricting the methods of fishing were issued recently by the Venezuelan Ministry of Agriculture, states a March 5 U. S. Embassy dispatch from Caracas. These decrees, numbers 3 and 4, were published in Gaceta Oficial on March 3.

Decree No. 3 states: "Article 1--It is prohibited to use the system of tapas regardless of the material of which these are made. Article 2--It is also prohibited to fish with nets known as chinchorros, palms, tree bark, or vines. Article 3--Violations will be penalized with fines ranging from Bolivares 50 to Bolivares 10,000 (US\$15-\$3,000) and the confiscation of the materials."

Decree No. 4 states: "Article 1--It is prohibited to fish with electric, gasoline, or any other lamps in the interior waters or within a distance of 9,200 meters or 5 miles of the coast. Article 2--The use in fishing of lines of argollas, circles of nets, tarrafas, purse seines, is prohibited in the waters of the interior or within 9,200 meters or 5 miles of the coast. Article 3--The use filetes cariteros, tendidos de hilo, or ahorque in the interior waters or within a distance of 9,200 meters or 5 miles of the coast are also prohibited. Article 4--Infractions will be penalized with fines ranging from Bolivares 50 to Bolivares 10,000 (US\$15-\$3,000) and the confiscation of the materials."

The Venezuelan Ministry of Agriculture states that the several local names used above are: Article 1, forms of purse seines; Article 2, gill nets. Evidently there are numerous forms of netting differing somewhat in various regions of the country. In this resolution an attempt is being made to prohibit two general types of nets--purse seines and gill nets.

In an interpretation of the new regulations, the Minister of Agriculture stated that they do not apply to large streams such as the Orinoco, a dispatch from the U. S. Embassy at Caracas states. In that river the methods prohibited for small streams will not apply.

* * * * *

PEARL FISHING IN 1953 SEASON NOT PROFITABLE: The 1953 Venezuelan pearl-oyster season was not profitable, reports a March 9 U.S. Embassy dispatch from Caracas. A total of 219 boats engaged in the fishery this year off the Island of Margarita from January 1 to April 1. The total average catch for the fleet was between 30 and 50 carats of pearls per day, about 35 percent lower than the last previous pearling season in 1951. The pearls are valued at between 1 and $1\frac{1}{2}$ bolivares (29 and 45 U. S. cents) per carat, not much lower than in 1951.

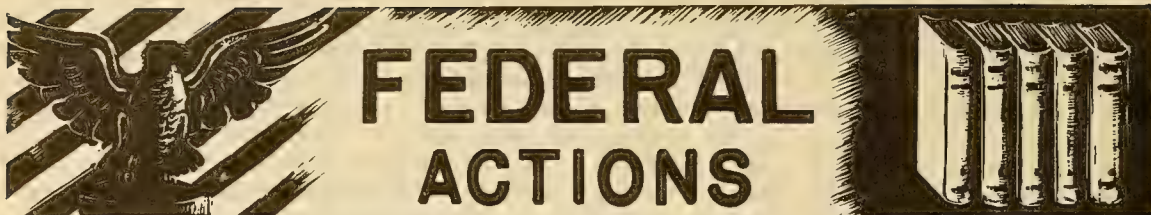
In 1912 pearls averaged about 6 bolivares (US\$1.79 $\frac{1}{2}$) per carat, but have never been as high since. In 1940 the Banco Agricola y Pecuario established a floor price for the principal grade "small round" of 2.20 bolivares (69 U.S. cents $\frac{2}{3}$) per carat and had to purchase almost the entire harvest. This year, it is stated, the Bank finally disposed of 100,000 carats of its several years supply at 1.80 bolivares (54 U. S. cents $\frac{1}{2}$).

It is believed that the world-wide changing tastes in jewels has reduced the demand for pearls.

$\frac{1}{2}$ BASED ON CURRENT EXCHANGE RATE: 3.35 BOLIVARES EQUAL US\$1.00.

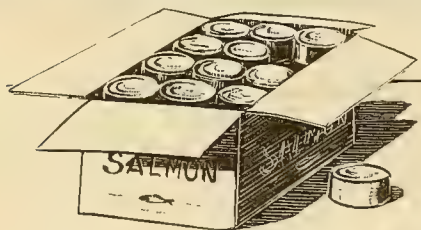
$\frac{2}{2}$ 1940 EXCHANGE RATE: 3.19 BOLIVARES EQUAL US\$1.00.





General Services Administration

NEW INTERIM CANNED SALMON SPECIFICATION: A revised interim Federal Specification for canned salmon (PP-S-0031b, dated May 1, 1953) has been approved by the Provisions Technical Committee, comprised of representatives of interested U. S. Government Agencies. Based upon available technical information, this interim specification issued by the General Services Administration has not been approved for promulgation as a regular Federal Specification as yet. Subject to modification, it is currently issued for optional use by all Federal agencies.



Major changes over the previous specification (dated August 8, 1951) include:

- (a) Two types of canned salmon.
 - Type I - Prepared from fresh (unfrozen) salmon.
 - Type II- Prepared from frozen salmon.
- (b) Shipping container shall be marked with the month and year of processing.
- (c) Army, Navy, and Air Force requirements that the average vacuum of 7 inches for a lot shall be required at point of acceptance.

Copies of Federal Specifications and the Federal Specifications Index may be obtained upon application, accompanied by check, money order, cash, or Government Printing Office coupons, to the General Services Administration, Business Service Center, Region 3, Seventh and D Streets SW., Washington 25, D. C. Single copies of product specifications required for bidding purposes are available without charge at the GSA Regional Offices in Boston, New York, Atlanta, Chicago, Kansas City, Mo., Dallas, Denver, San Francisco, Los Angeles, Seattle, and Washington, D. C. Prices of additional copies may be obtained from the GSA Regional Offices.

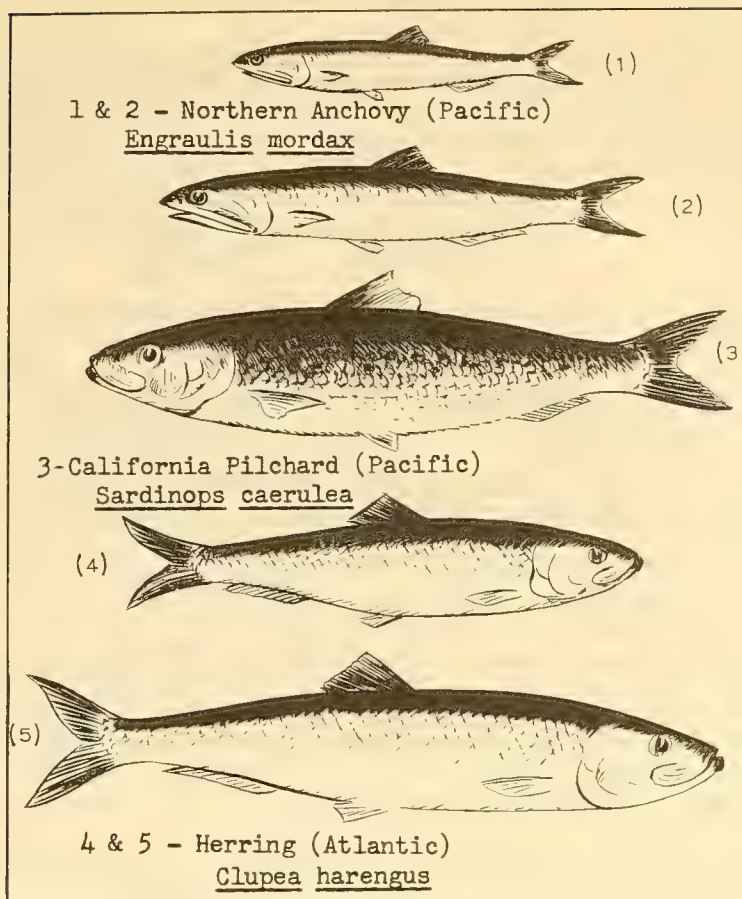


Department of Health, Education, and Welfare

FOOD AND DRUG ADMINISTRATION

LARGE HERRING MAY BE TEMPORARILY LABELED "LARGE SARDINES:" Canners are permitted to can and label herring (*Clupea harengus*) over nine inches as "large sardines." Canners who have specifically requested an opinion from the U. S. Food and Drug Administration have received letters indicating that the Agency would not adversely criticize the labeling of herring as "large sardines" provided they are specifically

SMALL HERRING LESS THAN 9 INCHES LONG (NO. 4) ARE PACKED BY MAINE CANNERS AND LABELED AS "SARDINES." CERTAIN CANNERS HAVE BEEN ADVISED BY THE U. S. FOOD AND DRUG ADMINISTRATION THAT TEMPORARILY THEY WON'T ADVERSELY CRITICIZE THE LABELING OF LARGE HERRING OVER 9 INCHES LONG (NO. 5) AS "LARGE SARDINES." PILCHARD AND ANCHOVY ARE SHOWN IN SKETCH FOR COMPARATIVE PURPOSES AND ARE NOT AFFECTED BY THE FOOD AND DRUG ADMINISTRATION STATEMENT.



labeled "large sardines" clearly and conspicuously together with the packing medium. This will be a temporary expedient until the U. S. Food and Drug Administration is able to hold a public hearing on the matter and establish a standard of identity for canned sardines.



Department of the Interior

DEFENSE FISHERIES ADMINISTRATION ABOLISHED: Because of the progressive relaxation of emergency controls, the Defense Fisheries Administration (DFA) will terminate its activities formally on June 30, 1953, Secretary of the Interior Douglas McKay announced on May 15.

This defense agency was originally established on December 4, 1950, as a counterpart of World War II's Office of the Coordinator of Fisheries to handle manpower, material, production, and other problems confronting the fishery industry as a result of the stepped-up defense production operations.

After June 30, 1953, the following DFA functions will be continued in the Branch of Commercial Fisheries, Fish and Wildlife Service:

- (1) Making studies of proposed military restricted zones in marine areas;
- (2) Making studies of individual requests for draft deferment, delays in recall of Reservists, and discharges from the military of persons employed in the commercial fisheries;
- (3) Making studies of and compiling data on material and equipment requirements for the industry under various degrees of mobilization;
- (4) Rendering spot assistance to the fishery industry in obtaining scarce materials, equipment, and supplies; and
- (5) Making studies and recommendations concerning applications for Federal financing of fishery facilities.

The resignation of Maurice Rattray was accepted by the Secretary on April 29, 1953. Rattray was recruited in January 1951 and served as a Deputy Administrator and later as Assistant to the Administrator.

Key personnel of DFA's remaining staff will be returned to the Branch of Commercial Fisheries, Fish and Wildlife Service, from which they were originally selected. These personnel include Fred F. Johnson, DFA Executive Officer, who will return as one of the two Assistant Chiefs of the Branch of Commercial Fisheries; E. A. Power, DFA Chief of the Branch of Material Facilities, who will resume his duties as Chief of the Statistical Section; and R. A. Kahn, Chief of DFA's Branch of Economic Facilities, who will return as Chief of the Section of Economics and Cooperative Marketing.

The text of the order as it appeared in the Federal Register of May 19 follows:

Office of the Secretary

[Order No. 2722]

DEFENSE FISHERIES ADMINISTRATION

ABOLITION

MAY 13, 1953.

The Defense Fisheries Administration is abolished as of the close of business

on June 30, 1953. The Administration will proceed at once, in conformity with applicable laws and regulations, to terminate its activities as rapidly as possible. Proper provision will be made for the liquidation of fiscal accounts, the disposition of official records and Government property, the completion of all personnel and miscellaneous administrative matters, to the extent possible, and the completion of current surveys and reports. Any unfinished administrative work as of that date will be assumed by the Fish and Wildlife Service.

DOUGLAS MCKAY,
Secretary of the Interior.

FISH AND WILDLIFE SERVICE

JOHN L. FARLEY TAKES OATH AS DIRECTOR: John L. Farley of Seattle, Wash., was sworn in at Seattle on May 25 as Director of the Fish and Wildlife Service. Federal District Judge John C. Bowen administered the oath.



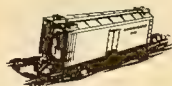
The ceremony was conducted at a breakfast meeting of the Seattle Chamber of Commerce and was witnessed by 60 or more business associates of Farley, and representatives of the Pacific Northwest fishing industry. Under Secretary of the Interior Ralph Tudor, who had just returned from an Alaska inspection tour, was also present and spoke briefly.

Farley was scheduled to address a meeting of the Western Wildlife Association in Long Beach, Calif., on June 1 and to speak before the annual meeting of the Izaak Walton League in Grand Rapids, Mich., on June 4. He was expected to report for duty in Washington on June 6.



Interstate Commerce Commission

RAILWAY EXPRESS AGENCY TO CONTINUE EXPRESS SERVICES: Counsel for certain United States railroads on May 27 in Interstate Commerce Commission docket Ex Parte 185 stated that the present type and scope of national express service will be continued by the Railway Express Agency after February 28, 1954, in accordance with a draft proposal of an agreement between the railroads and the agency now under consideration.



Mutual Security Agency

FORMOSA TO PURCHASE FISHING TRAWLERS AND EQUIPMENT WITH MSA FUNDS: Formosa has been authorized by the Mutual Security Agency to spend \$190,000 for the purchase of fishing trawlers and equipment, a May 5 news release from that agency reports. The contract period covering these purchases is from May 1, 1953, to November 30, 1953. The terminal delivery date is November 30, 1954. Formosa is authorized to make these MSA-financed purchases in the United States and Possessions, United Kingdom, or Japan.

* * * * *

THAILAND TO PURCHASE FISHING GEAR WITH MSA FUNDS: Thailand has been authorized by the Mutual Security Agency to spend \$12,000 for the purchase of fishing gear, a May 14 news release from that agency reports. Thailand is authorized to make this MSA-financed purchase in the United States and Possessions.

Procurement of this fishing gear will be carried out through another U. S. Government agency.



Eighty-Third Congress (First Session)

APRIL 1953

Listed below are public bills and resolutions introduced and referred to committees or passed by the Eighty-Third Congress (First Session) and signed by the President that directly or indirectly affect the fisheries and allied industries. Public bills and resolutions are shown in this section only when introduced and, if passed, when signed by the President; but also shown are the more pertinent reports, hearings, or chamber actions on some of the bills shown in this section from month to month.

BILLS INTRODUCED:

Distribution of Fishery Products: S. 1731 (Saltonstall) - A bill to further encourage the distribution of fishery products, and for other purposes; to the Committee on Interstate and Foreign Commerce. (This bill provides that from funds available to the Secretary of Agriculture to carry out the provisions of section 32 of the Act of August 24, 1935, 49 Stat. 774, as amended, \$1,000,000 a year shall be transferred to the Secretary of the Interior. Of this, \$750,000 shall be used to promote the free flow of domestically-produced fishery products in commerce by conducting a fishery educational service and fishery technological and relat-

ed research programs; and \$250,000 to develop and increase markets for domestic fishery products. Similar to H. R. 4303 (Lane) but does not provide for Government purchase of surplus fishery products.)

Interior Appropriations: H. R. 4828 (Jensen) - A bill making appropriations for the Department of the Interior for the fiscal year ending June 30, 1954, and for other purposes; to the Committee on Appropriations. (This bill includes appropriations for the Fish and Wildlife Service.)

This bill reported out by the Committee (H. Rept. 314).

Regulation of Chemical Additives in Food: H. R. 4901 (Miller of Nebraska) - A bill to amend the Federal Food, Drug, and Cosmetic Act, as amended, by providing for the regulation of chemical additives in food to insure that such chemical additive has been adequately pretested and declared safe; to the Committee on Interstate and Foreign Commerce.

Return of Fishing Vessels: S. J. Res. 67 (Tobey) - Joint resolution to repeal certain World War II laws relating to return of fishing vessels, and for other purposes; to the Committee on Interstate and Foreign Commerce. This bill repeals the Act of April 29, 1943, that authorized the return to private ownership of certain vessels formerly used or suitable for use in the fisheries or industries related thereto; and the Act of August 10, 1946, relating to the sale of surplus vessels suitable for fish. Vessels would be disposed of in accordance with other laws enacted prior to these two.

Striped Bass Protection: H. R. 4585 (Delaney) - A bill to protect striped bass; to the Committee on Merchant Marine and Fisheries. This bill makes it unlawful to fish for striped bass within the maritime and territorial jurisdiction of the United States by any means except a hook and line.

Also: H. R. 4787 (Wolverton)...

Trade Agreement Authority: H. R. 4533 (Ayres) - A bill to extend the authority of the President to enter into trade agreements under section 350 of the Tariff Act of 1930, as amended; to the Committee on Ways and Means.

Also: H. R. 4491 (Robson of Kentucky)...

H. R. 4590 (Frelinghuysen) ...

H. R. 4594 (Keating)...

H. R. 4592 (Hyde)...

H. R. 4719 (Ford)...

H. R. 4724 (Javits)...

Tuna Import Duty: H. R. 4945 (Utt) - A bill to amend the Tariff Act of 1930, so as to impose certain duties upon the importation of tuna fish; to the Committee on Ways and Means. This bill imposes on tuna and tuna-like fish, fresh or frozen (whether or not packed in ice) whole or beheaded or eviscerated or both, or filleted, skinned, boned, sliced, or divided into portions, a 30 percent ad-valorem duty; except that, for a quantity of tuna entered in each calendar year not in excess of 15 percent of the average apparent annual consumption of tuna during the preceding three calendar years, the rate of duty shall be 15 percent ad valorem. This amendment shall apply to all tuna entered, or withdrawn from warehouse, for consumption.

BILL REPORTED:

Temporary Economic Controls: Committee on Banking and Currency reported to Senate S. 1081, providing authority for temporary economic controls and for other purposes, with amendment (S. Rept. 138). Before reporting the bill, Committee amendments included one which would allow the President to allocate materials for general distribution in the civilian market if he finds either that it is a scarce material critical to the national defense, or that the national defense requirements for the material cannot be met without creating significant dislocation of its normal distribution in the civilian market to a degree creating appreciable hardship.

BILLS PASSED:

Interior Department Appropriations: The House passed, by a voice vote, H. R. 4828, making appropriations for the Department of the Interior for the fiscal year ending June 30, 1954, after rejecting a recommittal motion with instructions. (This bill includes appropriations for the Fish and Wildlife Service.) As reported from the Committee on Appropriations the bill carried appropriations of \$404,863,239, which figure is \$202,473,161 below the budget estimates and \$137,874,262 under the 1953 appropriation. Amendments were adopted to: provide an additional \$50,000 for expenses of planning in connection with the southeastern power area; provide \$100,000 for investigations in Alaska by the Bureau of Reclamation; increase by \$1,217,104 the funds of the Bureau of Mines for conservation and development of mineral resources.

Titles of States to Lands and Resources Beneath Navigable Waters: By a vote of 285 to 108 the House passed H. R. 4198, to confirm and establish the titles of the States to lands beneath navigable waters within State boundaries and to the natural resources within such lands and waters, and to provide for the use and control of said lands and resources and the resources of the outer Continental Shelf. A recommittal motion was rejected by a vote of 283 to 106.

PRESIDENT'S MESSAGE:

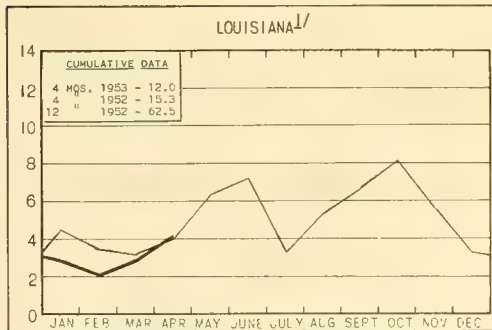
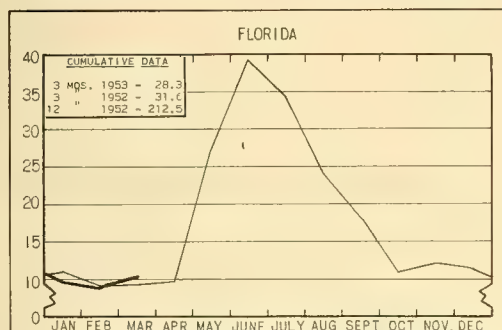
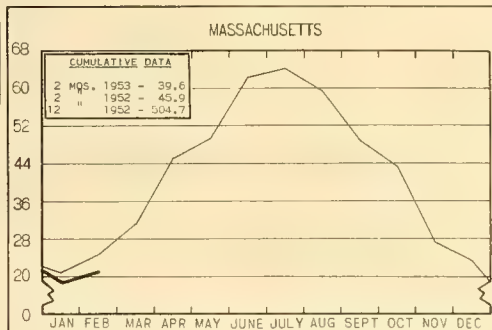
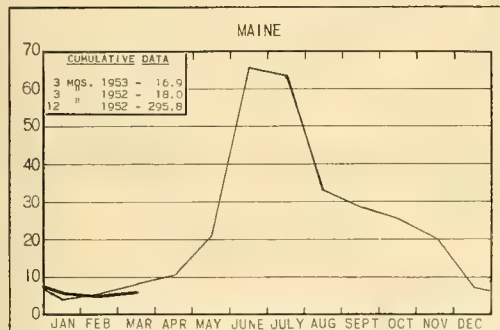
Reciprocal Trade Agreements: Senate received message from President transmitting recommendation that the Reciprocal Trade Agreements Act be renewed for 1 year pending completion of a thorough and comprehensive reexamination of U. S. economic foreign policy—referred to Committee on Finance and ordered to be printed as S. Doc. 38. House received same message—referred to Committee on Ways and Means.



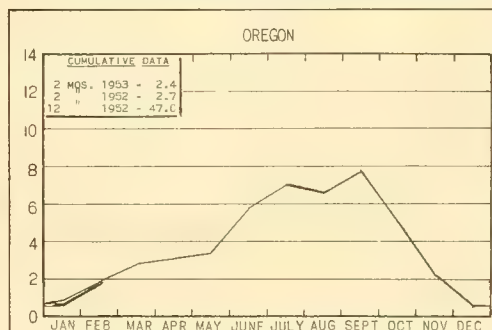
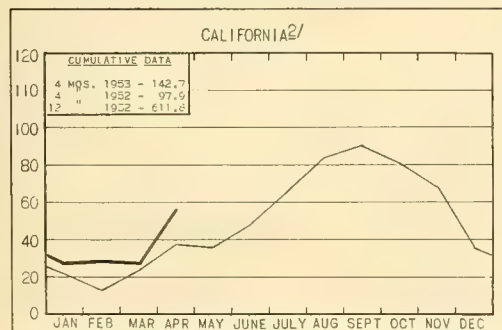
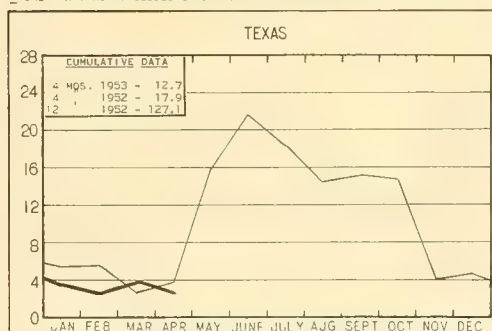
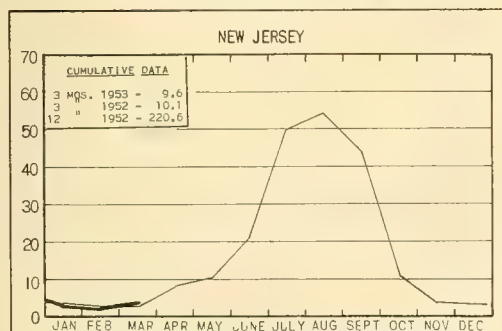


CHART 1 - FISHERY LANDINGS for SELECTED STATES

In Millions of Pounds



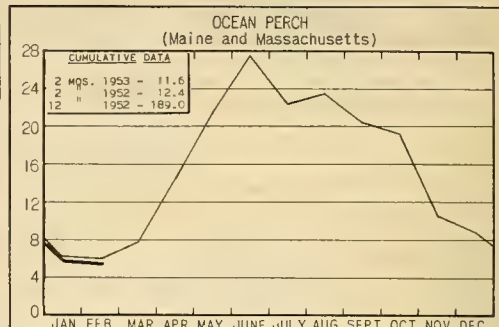
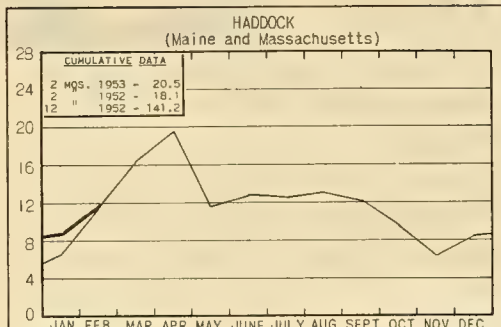
^{1/}ONLY PARTIAL--INCLUDES LANDINGS AT PRINCIPAL PORTS.



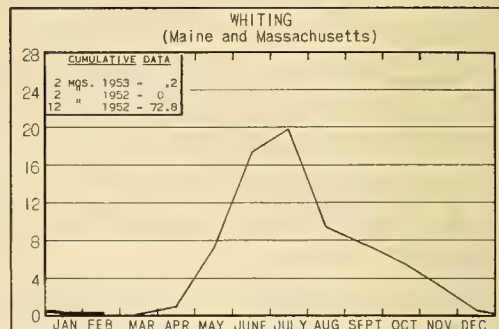
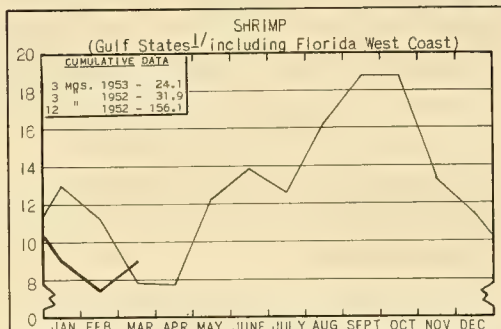
^{2/}ONLY PARTIAL--INCLUDES PRODUCTION OF MAJOR FISHERIES AND MARKET FISH LANDINGS AT PRINCIPAL PORTS.

CHART 2 - LANDINGS for SELECTED FISHERIES

In Millions of Pounds

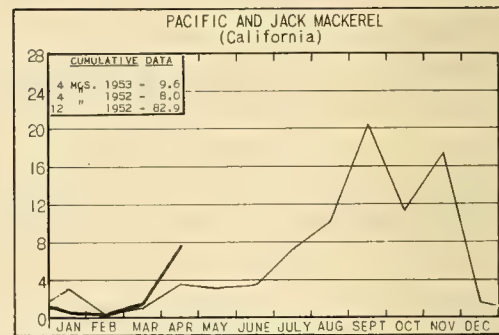
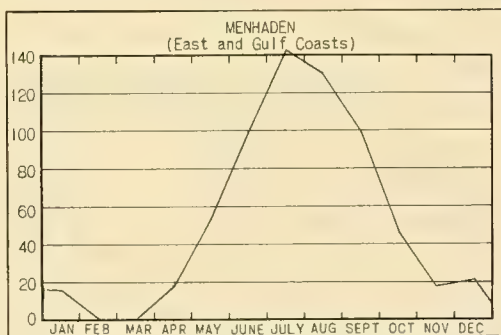


In Millions of Pounds



1/LA. & ALA. DATA BASED ON LANDINGS AT PRINCIPAL PORTS AND ARE NOT COMPLETE.

In Thousands of Tons



In Thousands of Tons

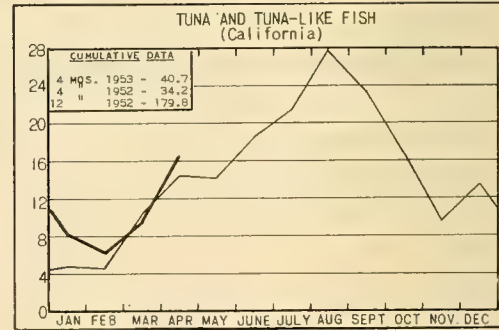
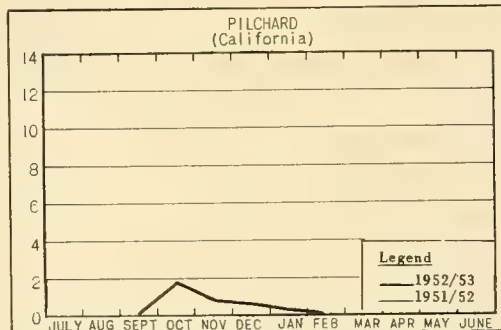
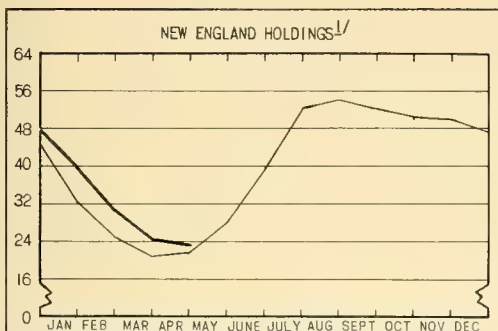
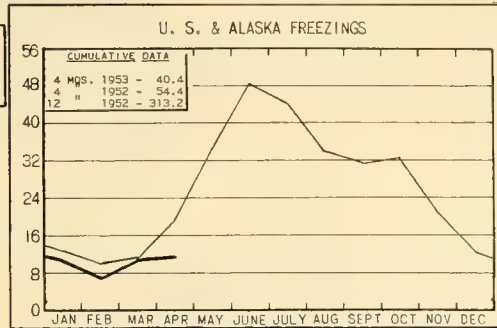
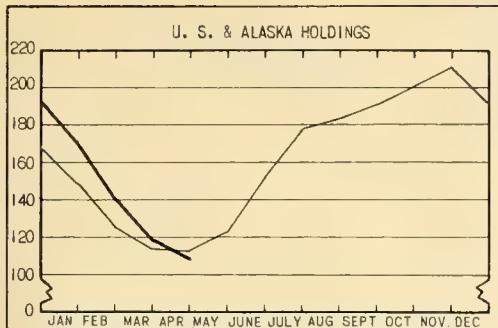
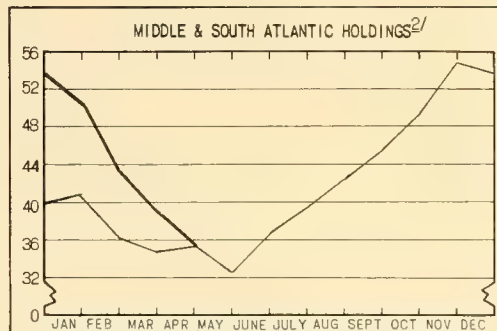


CHART 3 - COLD-STORAGE HOLDINGS and FREEZINGS of FISHERY PRODUCTS *

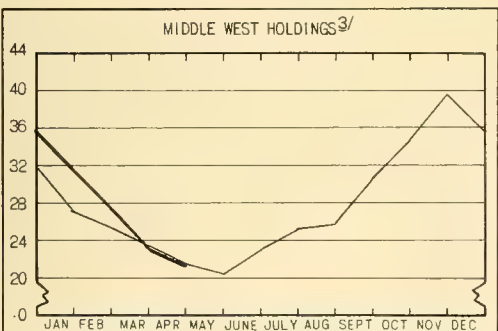
In Millions of Pounds



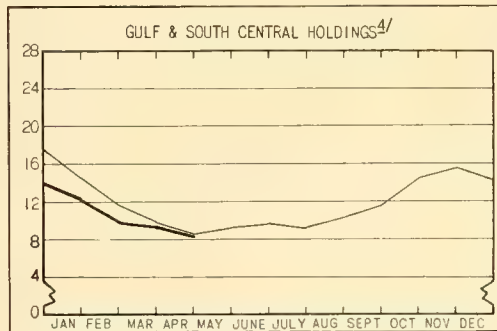
^{1/}MAINE, MASSACHUSETTS, RHODE ISLAND, AND CONNECTICUT.



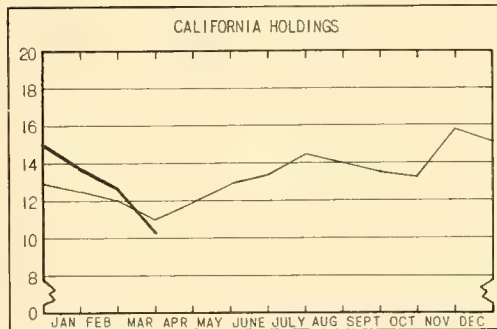
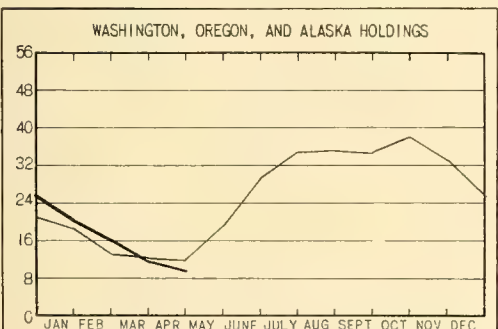
^{2/}ALL EAST COAST STATES FROM N. Y. SOUTH.



^{3/}OHIO, IND., ILL., MICH., WIS., MINN., IOWA, MO., N. DAK., NEBR., & KANS.



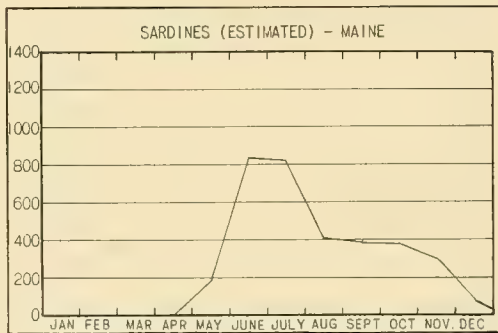
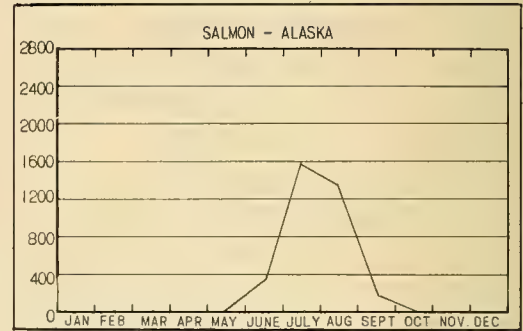
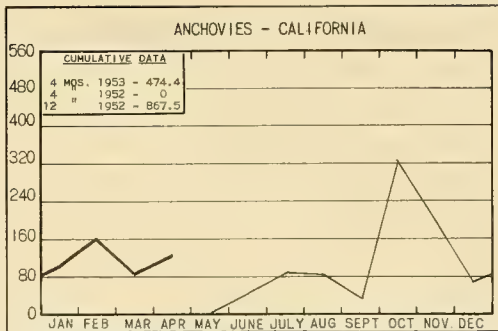
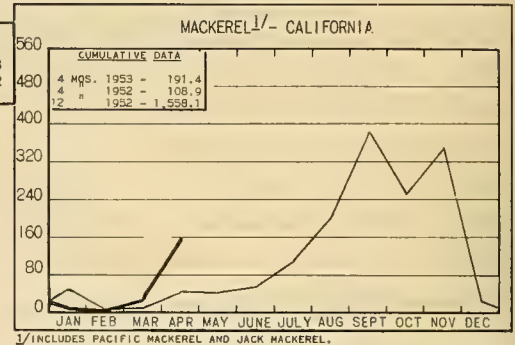
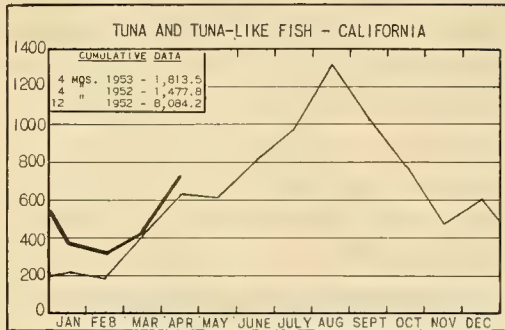
^{4/}ALA., MISS., LA., TEX., ARK., KY., & TENN.



*Excludes salted, cured, and smoked products.

CHART 4 - CANNED PACKS of SELECTED FISHERY PRODUCTS

In Thousands of Standard Cases



STANDARD CASES

Variety	No.Cans	Can Designation	Net Wgt.
SARDINES	100	$\frac{1}{2}$ drawn	3 $\frac{1}{2}$ oz.
SHRIMP	48	—	5 oz.
TUNA	48	No. $\frac{1}{2}$ tuna	6 & 7 oz.
PILCHARDS	48	No. 1 oval	15 oz.
SALMON	48	1-pound tall	16 oz.
ANCHOVIES	48	$\frac{1}{2}$ lb.	8 oz.

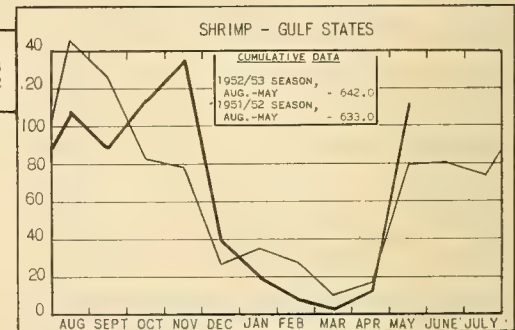
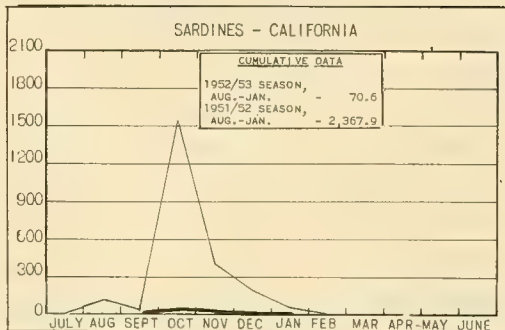
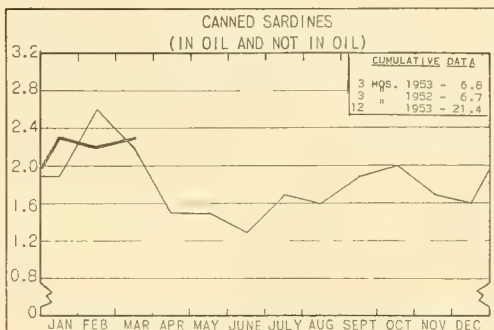
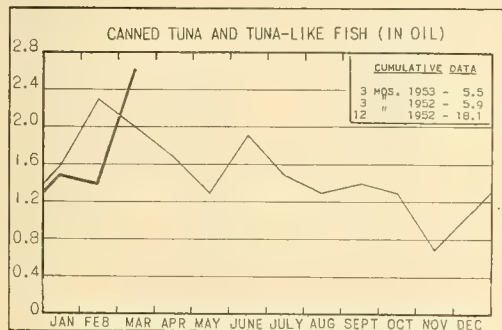
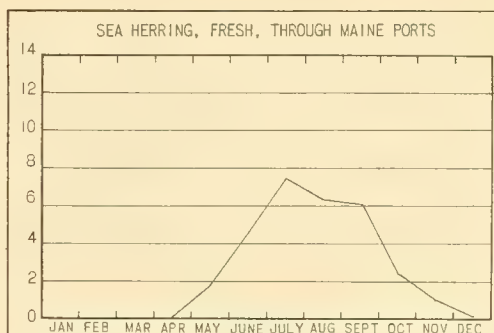
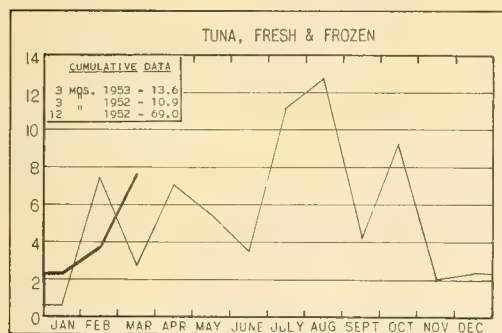
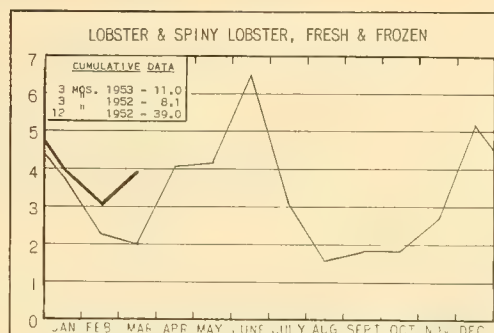
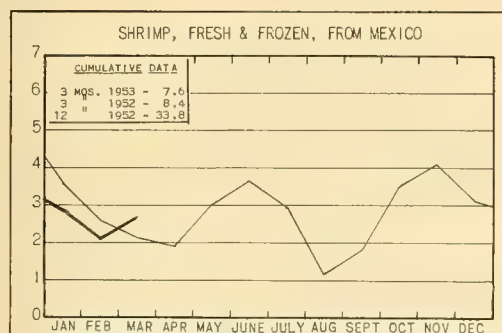
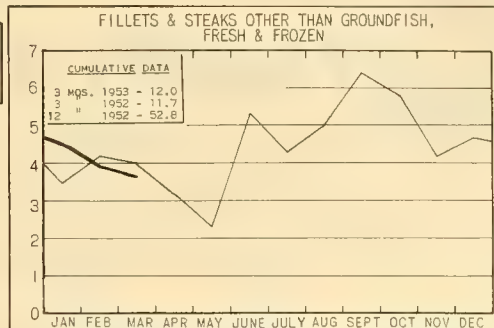
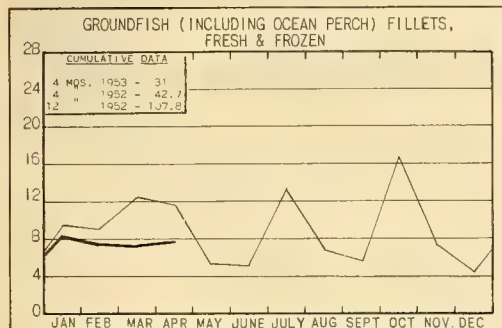
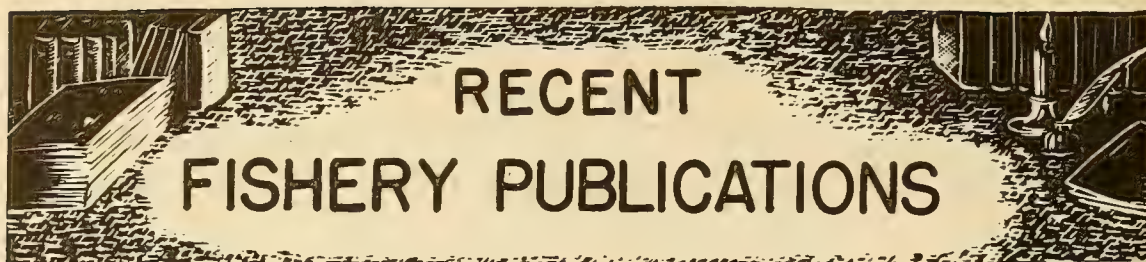


CHART 5 - U.S. FISHERY PRODUCTS IMPORTS

In Millions of Pounds





Recent publications of interest to the commercial fishing industry are listed below

FISH AND WILDLIFE SERVICE PUBLICATIONS

THESE PROCESSED PUBLICATIONS ARE AVAILABLE FREE FROM THE DIVISION OF INFORMATION, U. S. FISH AND WILDLIFE SERVICE, WASHINGTON 25, D. C. TYPES OF PUBLICATIONS ARE DESIGNATED AS FOLLOWS;

- CFS - CURRENT FISHERY STATISTICS OF THE UNITED STATES AND ALASKA.
- FL - FISHERY LEAFLETS.
- SL - STATISTICAL SECTION LISTS OF DEALERS IN AND PRODUCERS OF FISHERY PRODUCTS AND BYPRODUCTS.
- SSR.-FISH. - SPECIAL SCIENTIFIC REPORTS--FISHERIES (LIMITED DISTRIBUTION).
- SEP.- SEPARATES (REPRINTS) FROM COMMERCIAL FISHERIES REVIEW.

Number	Title
CFS-835	- Mississippi Landings, November 1952, 2 p.
CFS-844	- Massachusetts Landings, December 1952, 8 p.
CFS-845	- Maine Landings, December 1952, 4 p.
CFS-846	- Mississippi Landings, December 1952, 2 p.
CFS-847	- Florida Landings, December 1952, 6 p.
CFS-848	- Texas Landings, January 1953, 4 p.
CFS-850	- New Jersey Landings, November 1952 2 p.
CFS-851	- New Jersey Landings, December 1952, 2 p.
CFS-854	- Massachusetts Landings, January 1953, 7 p.
CFS-855	- Maine Landings, January 1953, 3 p.
CFS-856	- Mississippi Landings, January 1953, 2 p.
CFS-857	- Florida Landings, January 1953, 6 p.
CFS-858	- Texas Landings, February 1953, 4 p.
CFS-859	- Fish Meal and Oil, February 1953, 2 p.
CFS-860	- Lake Fisheries, 1951 Annual Summary, 5 p.
CFS-861	- Frozen Fish Report, April 1953, 8 p.
CFS-863	- Packaged Fish, 1952 Annual Summary, 4 p.
CFS-869	- Maine Landings, 1952 by Months, Annual Summary, 6 p.
FL -178	- Partial List of Fishing Boat Builders (Revised), 4 p.
FL -336p-	Quarterly Outlook for Marketing Fishery Products, April-June 1953, 37 p.
FL -393	- Preliminary Review of The Fisheries of The United States, 1952 (Revised), 20 p.

Wholesale Dealers in Fishery Products (Revised):

SL - 3	- Massachusetts, 1953, 10 p.
SL - 4	- Rhode Island, 1953, 2 p.
SL - 7	- New Jersey, 1952, 5 p.
SL - 8	- Pennsylvania, 1952, 3 p.
SL - 14	- South Carolina, 1952, 3 p.
SL - 15	- Georgia, 1952, 2 p.
SL - 17	- Alabama, 1952, 3 p.
SL - 18	- Mississippi, 1952, 3 p.
SL - 22	- Oregon, 1952, 4 p.
SL - 23	- Washington, 1952, 8 p.
SL - 40	- Oklahoma, 1951, 1 p.

Number Title Firms Canning (Revised):

SL -102	- Maine Sardines, 1952, 2 p.
SL -102A-	California Sardines, 1952, 1 p.
SL -103	- Tuna and Tuna-Like Fishes, 1952, 2 p.
SL -104	- Mackerel, 1952, 1 p.
SL -105	- Alewives and Alewife Roe, 1952, 1 p.
SL -108	- Salmon Eggs for Bait, 1952, 1 p.
SL -109	- Caviar and Fish Roe, 1953, 2 p.
SL -110	- Oysters, 1952, 2 p.
SL -116	- Food for Animals from Fishery Products, 1952, 2 p.
SL -118	- Groundfish Flakes, 1952, 1 p.

Firms Manufacturing (Revised):

SL -152	- Oyster Shell Products, 1952, 2 p.
SL -155	- Marine-Shell Buttons, 1952, 1 p.
SL -159	- Fresh-Water Mussel-Shell Products, 1952, 1 p.

SSR-Fish. No. 92 - Use of Electricity in the Control of Sea Lampreys: Electromechanical Weirs and Traps and Electrical Barriers, by Vernon C. Applegate, Bernard R. Smith, and Willis L. Nielsen, 56 p., illus., December 1952. An account of experiments conducted in 1951 and 1952 with electro-mechanical and electrical barriers for the blocking and/or capture of sea-lamprey runs in tributary streams of northern Lake Huron and northern Lake Michigan. Details are presented on structural characteristics, experimental manipulations, and effects on sea lampreys and other fish. All installations were operated from 110-volt alternating-current power. On the basis of the experiments detailed, recommendations are offered on devices suitable for the control of sea

lampreys under various stream conditions. The general structure and plan, and electrical characteristics of the devices must be adjusted to such factors as depth of water and extent of its fluctuation, rate of stream flow, physical nature and conductivity of bottom materials, conduc-

tivity of water, and need for the protection of fish that migrate simultaneously with the sea lamprey.

Sep. 347 - Experimental Tuna Purse Seining in the Central Pacific.

THE FOLLOWING SERVICE PUBLICATION IS FOR SALE AND IS AVAILABLE ONLY FROM THE SUPERINTENDENT OF DOCUMENTS, WASHINGTON 25, D. C.

Laws and Regulations for Protection of the Commercial Fisheries of Alaska, 1953, Regulatory Announcement 39, 62 p., printed, March 1953, 20 cents. This publication is divided into two sections. One section contains laws for the protection of the commercial fisheries of Alaska and related information, including the authority for regulation, rules regarding oyster culture, Bristol Bay residence requirements, regulation of salmon

on escapement, fishing-gear restrictions, exceptions to weekly closed seasons, etc. The second section contains all the regulations for the protection of the commercial fisheries of Alaska, amended to date, and which became effective April 6, 1953. These 1953 regulations supersede the regulations published in Regulatory Announcement 35 which became effective March 15, 1952.

MISCELLANEOUS PUBLICATIONS

THESE PUBLICATIONS ARE NOT AVAILABLE FROM THE FISH AND WILDLIFE SERVICE, BUT USUALLY MAY BE OBTAINED FROM THE AGENCIES ISSUING THEM. CORRESPONDENCE REGARDING PUBLICATIONS THAT FOLLOW SHOULD BE ADDRESSED TO THE RESPECTIVE AGENCIES OR PUBLISHERS MENTIONED. DATA ON PRICES, IF READILY AVAILABLE, ARE SHOWN.

Bullfrog Farming and Frogging in Florida, Bulletin No. 56, 80 p., illus., printed. Department of Agriculture, Tallahassee, Fla., January 1952. Describes the raising of frogs and the necessity of scientific handling for market. Brief descriptions are presented of the characteristics and habits of the southern bullfrog, *Rana grylio*, and the common bullfrog, *Rana catesbeiana*, and the biology of the family of Ranidae. Among the subjects covered are: catching wild frogs; economic value of frogs; raising bullfrogs domestically; establishment of a frog farm in Florida; stocking ponds; preparation of frogs for market; and famous ways to serve frog meat. A list of publications on frogs is also included. The frog industries of Japan and France are also discussed.

Commercial Fishing -- America's Oldest Industry, 16 p., illus., printed. Gulf Oil Corporation, Gulf Refining Company, Pittsburgh 30, Pa. This colorfully illustrated booklet presents the background and importance of the commercial fishing industry--the oldest established industry in the United States. It gives the highlights of the industry as practiced today in the six principal fishing areas of the country--New England, Middle Atlantic, South Atlantic, Gulf of Mexico, Great Lakes, and West Coast. Such items as precise geographic locations, types of fish found in the waters of the area, and methods of fishing are described in each of the sections. New developments within the industry and within each of the fishing areas are outlined--gill-net fishing, the spotting of menhaden schools by airplane, new varieties of fish, and new fishing areas. It contains several pages on fish-processing plants.

Holding Live Lobsters in Aerated Artificial Sea Water, by D. G. Wilder, General Series No. 21, 4 p., illus., printed. Fisheries Research Board of Canada, Atlantic Biological Station, St. Andrews, N. B., Canada, January 1953. This circular summarizes the conditions required for the successful holding of live lobsters. The author de-

scribes a simple, inexpensive wooden holding unit in which commercial quantities of lobsters have been kept alive and active for several weeks. A diagram of the wooden tank and details of a filter box are included. The factors, such as temperature, salinity, and oxygen, which control the survival of lobsters in both natural and artificial sea water, are also discussed.

Home Curing of Meats and Fish, by A. W. Oliver and E. W. Harvey, Extension Bulletin 731, 10 p., printed. Federal Cooperative Extension Service, Oregon State College, Corvallis, Oregon, December 1952. Contains a section on the home curing of salmon. Instructions are given for preparing mild-cured salmon, and light-smoked or kippered salmon. Methods are also given for preparing salted sablefish (black cod) and salted smelt, besides the curing of other meats.

Indo-Pacific Fisheries Council Proceedings (3rd Meeting, 1st-16th February 1951, Madras, India), Section I, pp. 1-56, and Sections II and III, pp. 57-227, illus., printed. Food and Agriculture Organization of the United Nations, Rome, Italy, 1951. Section I reports proceedings. It gives the reports of the various committees; a summary account of the meeting; and the agenda and program of the meeting. It also lists the technical papers presented at the meeting, and lists the delegates, alternates, experts, advisers, and observers. Section II contains the technical papers presented at the meeting by delegations. Some of the papers relating to commercial fisheries are as follows: "Statement on Marine Investigations in Malaya," by Tham Ah Kow; "The Economic Marine Algae of Malaysia and their Applications--II The Phaeophyta," by J. S. Zaneveld; "Indigenous Marine Fishing Gear of Thailand--Supplementary Notes," by Swarn Charernphol; "A Consideration of the Classification of Fishing Gear and Methods," by T. W. Burdon; "An Attempt at Classification of Fishing Methods," by C. J. Bottemanne; "Sur la Pisciculture au Cam-

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bodge (Fish Culture in Cambodia)," by M. M. La-font et Savoeun; "Fish Culture in Pakistan," by Nazir Ahmad; "Investigation of Sea-weed Products in India with a Note on Some Properties of Various Indian Agars," by Francesca Thivy; "A Survey of the Sea Fisheries of India," by D. V. Bal and S. K. Banerji; "L'Organisation du Service des Peches du Cambodge (Organization of Fisheries Department in Cambodia)," by Par M. Dom-Savoeun; and "Working of Fisheries Programmes by Member Countries of the Indo-Pacific Fisheries Council," by Dr. H. Srinivasa Rao. Section III contains the symposium papers, mainly on the collection of eggs and fry for transplanting.

Washington Department of Fisheries, Sixty-Second Annual Report, 128 p., printed. Washington State

Department of Fisheries, 1308 Smith Tower, Seattle 4, Washington, 1953. Discusses the problems and policies of the Department of Fisheries, with particular reference to the rehabilitation of the salmon fisheries. The research and management program for both fish and shellfish, and the Department's artificial propagation activities are commented on in considerable detail. Cooperative programs with other states, the Federal Government, and the International Pacific Salmon Commission are discussed. The report likewise contains information on the Department's enforcement program, the orders of the Director issued in 1951 and 1952, a list of departmental personnel, a summary of 1951 catch statistics, historical data on the catch of fishery products, and the pack of canned salmon.

--E. A. Power



SCHOOLING FISH CAN SEE

Vision plays a dominant role in the schooling of fish, although other senses may contribute. Only in tuna schools do individual fish act as leaders.

Fish that cannot see one another will not school, nor even form into aggregations, reports Dr. James W. Atz, ichthyologist of the New York Zoological Society. Vision plays the dominant role in fish schooling, although other senses like touch, hearing, and smell may have lesser parts.

A true school of fish is a group in which all individuals are facing a common direction, parallel and regularly spaced, and moving at a uniform speed. Aggregations are groups in which fish are attracted together but without uniform spacing or direction.

There may be cases of "false schooling," when aggregations of fish line up in the same direction in response to a water current. In an experiment with sunfish (*Lepomis*), an aggregation all lined up regularly when a current was started in their tank, but the group broke up as soon as the flow was stopped.

One popular theory explains fish schooling to work essentially this way: (1) two or more fish swim towards each other when they come into visual range; (2) they line up in parallel paths to keep each other in the desired close range while on the move or in a strong current; (3) a certain antagonism, however, may act to keep them a minimum distance apart.

Another idea is that schooling fish use one another as visual reference points, to help locate themselves in the empty space of water. Typical schooling fish are usually those of the open sea, where there is practically nothing--except another fish--for a constantly moving fish to fix upon to give him a sense of location.

In general, fish in the center of a school are much closer together than those nearer the edge. With the exception of tuna schools, there are no reports that individual fish act as leaders of schools.

--Science News Letter, May 16, 1953.

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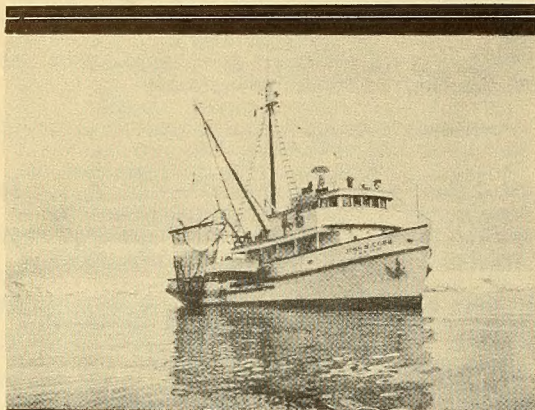
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P. 45--A. W. Anderson; p. 63--Food and Agriculture Organization.



COMMERCIAL FISHERIES REVIEW



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FISH and WILDLIFE SERVICE
United States Department of the Interior
Washington, D.C.

Federal regulations require that all mailing lists be circularized periodically. A circularization letter dated May 15 was sent to all those on the Commercial Fisheries Review mailing list. (Individuals or firms who have requested their names added to the mailing list subsequent to March 1, 1953, will not receive a circularization letter and will be retained on the mailing list, unless the recipient meanwhile requests that his name be removed.)

Firms or individuals who do not return the circularization letter will be dropped from the Commercial Fisheries Review mailing list. The June 1953 issue will be the last one to be mailed to those in the United States who do not reply, and the August 1953 issue will be the last one for those in foreign countries. If you don't want to miss any issues of the Review, return the circularization letter promptly.

Comments or suggestions regarding the Review will be appreciated by the editors.

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